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ANNUAL REPORT
OF THE
PUBLIC HEALTH COMMISSIONER
WITH THE GOVERNMENT OF INDIA
FOR 1925



Volume I
With Appendices

CALCUTTA: GOVERNMENT OF INDIA
CENTRAL PUBLICATION BRANCH
1927

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ANNUAL REPORT OF THE PUBLIC HEALTH COMMISSIONER WITH THE GOVERNMENT OF INDIA FOR 1925.

TABLE OF CONTENTS.

SECTION I.

ON THE STATE OF THE PUBLIC HEALTH IN BRITISH INDIA.

PARA.	PAGE.
1. Introduction	1
2. Population	2
3. Rainfall and other weather conditions	3
4. Agricultural and Economic conditions	4
5. Births—British India	7
6. Deaths—British India	8
7. Registration	10
8. Still-births	11
9. Infant mortality	11
10. Causes of infant mortality	14
11. Maternity and Child Welfare—	
A.—Maternal mortality	14
B.—Maternity and Child Welfare work	17
12. Municipalities specially reported on	22
13. Chief Causes of Mortality	26
14. Fevers	27
15. Malaria	28
16. Anti-malarial campaigns	20
17. Quinine	31
18. Relapsing fever	32
19. Kala-azar	33
20. Influenza	34
21. Enteric fever	34
22. Typhus fever	36
23. Beri-beri	36
24. Respiratory diseases	37
25. Pneumonia	39
26. Tuberculosis—General	39
Statistics of pulmonary tuberculosis	41
27. Dysentery and diarrhoea	43
28. Cholera—General	43
World Statistics	44
Statistics in British India	44
29. Plague—General	46
Statistics in British India	46

SECTION I—*contd.*

ON THE STATE OF THE PUBLIC HEALTH IN BRITISH INDIA—*contd.*

PARA.	PAGE.
30. Rat plague, rat extermination and rat fleas	48
31. Yellow fever	49
32. Small-pox—General	49
Statistics in British India	49
33. Small-pox hospitals	51
34. Ankylostomiasis—General	57
Statistics in British India	57
35. Leprosy—General	59
Statistics of leprosy	61
36. Rabies—General	61
Statistics of rabies	62
37. Mortality from wild animals	63
38. Dracontiasis (guineaworm)	63
39. Schistosomiasis	63
40. Goitre	63
41. Fairs and festivals—General	64
Provinces	64
42. Public health administration and staff training	65
43. School medical inspection—General	66
Provinces	67
44. Mines	68
45. Industrial workers—General	70
Bombay Presidency	70
46. Railways	71
47. Indian States	72
48. Mysore State	74
49. Hyderabad State (Deccan)	74

SECTION II.

MEDICAL INTELLIGENCE AND INTERNATIONAL HEALTH INCLUDING PORTS.

50. Epidemic diseases summary published by the Public Health Commissioner with the Government of India	75
51. Far Eastern Bureau of the League of Nations at Singapore—Conference of the Advisory Council	75
52. Activities of the Bureau	77
53. Visit of the Public Health Commissioner to the Health Secretariat of the League of Nations, Geneva and the matter of the scientific testing in India of oral bilivaccin	78
54. Interchange of Health Officers in Japan	79
55. A Review on the annual report of the Health Organisation of the League for 1925 and other important events	79
56. Office International D'Hygiene Publique, Paris	80
57. Inter-Departmental Pilgrimage Committee	81
58. International malaria congress, Rome	82

SECTION II—*contd.*MEDICAL INTELLIGENCE AND INTERNATIONAL HEALTH INCLUDING
PORTS—*contd.*

PARA.	PAGE.
59. Far Eastern Association of Tropical Medicine	82
60. Position of India in International health matters	82
61. Kamaran	83
62. Major Ports	83
63. Port of Calcutta	84
64. Port of Bombay	84
65. Port of Karachi	85
66. Port of Aden	86
67. Port of Rangoon	86
68. Port of Madras	87
69. Mortality from principal diseases in major ports	87

SECTION III.

VACCINATION AGAINST SMALL-POX.

A.—British India.

70—71. Details of Vaccination in British India	88—89
72. Results of Vaccinal operations	89

LYMPH VACCINE INSTITUTES AND THE SUPPLY OF VACCINE.

73. Madras	89
74. Bengal	90
75. Bihar and Orissa	90
76. Assam	90
77. United Provinces	91
78. Punjab	91
79. North-West Frontier Province	91
80. Burma	91
81. Bombay	92
82. Central Provinces	92
State of Vaccination in provinces	92
83. Delhi Province	92
84. Bengal Presidency	92
85. Bihar and Orissa	93
86. Assam	94
87. United Provinces	95
88. Punjab	97
89. North-West Frontier Province	98
90. Central Provinces	98
91. Madras Presidency	99
92. Bombay Presidency	101
93. Burma	101
94. Andamans	102
95. Vaccination among troops	102

SECTION III—*contd.*VACCINATION AGAINST SMALL-POX—*contd.*

PARA.	PAGE.
96. Compulsory Vaccination	103
<i>B.—Vaccination in Indian States</i>	103
97. Bihar and Orissa	103
98. Punjab	103
99. Bombay Presidency	104
100. Mysore State	104
101. Hyderabad State	104

SECTION IV.

PUBLIC HEALTH WORKS.

102. General	105
103. Provinces	107
104. Delhi Province	107
105. Bengal Presidency	107
106. Assam	108
107. Bihar and Orissa	108
108. United Provinces	109
109. Punjab	111
110. North-West Frontier Province	111
111. Central Provinces	112
112. Madras Presidency	112
113. Bombay Presidency	113
114. Burma	115

SECTION V.

LABORATORIES AND MEDICAL RESEARCH.

115. Central Research Institute, Kasauli	116
116. School of Tropical Medicine and Hygiene, Calcutta	117
117. Haffkine Institute, Bombay	118
118. King Institute of Preventive Medicine, Madras	121
119. Pasteur Institute of India, Kasauli	123
120. Pasteur Institute of Southern India, Coonoor	123
121. King Edward VII Memorial Pasteur Institute, Shillong	124
122. Burma Pasteur Institute and Bacteriological Laboratory	125
123. Pasteur Institute, Calcutta	127
124. Public Health Institute, Mysore	127
125. Indian Research Fund Association	127
126. Restoration of the Research Grant	129

SECTION VI.

MEDICAL INSTITUTIONS.

(i) STATE-PUBLIC, LOCAL FUND AND PRIVATE-AIDED CIVIL HOSPITALS
AND DISPENSARIES.

BRITISH INDIA.

PARA.	PAGE.
127. General	140 •
128. Delhi	141
129. Bengal (excluding Calcutta)	141
130. Calcutta	141
131. As-sam	142
132. Bihar and Orissa	142
133. Central Provinces	142
134. United Provinces	143
135. Punjab	143
136. Bombay Presidency	144
137. Burma	144
138. Madras Presidency	145
139. North-West Frontier Province	146
140. Baluchistan	146
INDIAN STATES	146
141. Mysore State	146
142. Hyderabad State (Deccan)	146 •
143. (ii) CIVIL HOSPITALS AND DISPENSARIES—(STATE--SPECIAL, RAILWAY AND PRIVATE NON-AIDED)	147
(iii) MENTAL HOSPITALS	148
144. General	148
145. Bengal	149
146. Bihar and Orissa	149
147. United Provinces	149
148. Punjab	149
149. Bombay Presidency	149
150. Central Provinces	150
151. Assam	150
152. Madras Presidency	150
153. Burma	150
(iv) MEDICAL COLLEGES	151 •
154. Bombay	151
155. Madras	151
156. Punjab	152
157. Bengal	153
158. United Provinces	154
159. Delhi	155
160. Bihar and Orissa	155
(v) MEDICAL SCHOOLS	155 •
161. Bengal	155
162. Madras	157

SECTION VI—*contd.*MEDICAL INSTITUTIONS—*contd.*

PAGE.	PAGE.
163. Bombay	157
164. United Provinces	158
165. Punjab	158
166. Burma	158
167. Bihar and Orissa	158
168. Assam	159
169. The X-Ray Institute, Dehra Dun	159
170. The Countess of Dufferin Fund	159

SECTION VII.

JAILS OF INDIA.

171. Jail population	160
172. Constantly sick rate	160
173. Admission rate	160
174. Death rate	160
175. Causes of sickness and mortality	161
176. Influenza	161
177. Cholera	161
178. Small-pox	161
179. Dysentery	161
180. Diarrhoea	161
181. Malaria	162
182. Pneumonia	162
183. Tubercle of the lungs	162
184. Weight of prisoners	163

Special Remarks on provinces.

185. Madras	164
186. Bombay	165
187. Bengal	165
188. Bihar and Orissa	166
189. United Provinces	166
190. Punjab	167
191. Central Provinces	168
192. Assam	171
193. North-West Frontier Province	171
194. Burma	171
195. Andamans	172
196. Coorg	174
197. Conclusions	174

SECTION VIII.

SUMMARY.

PARA.	PAGE.
198—202. Record of 1925	175

APPENDICES.

Section I	i
Section III	xxix
Section V	xxxv
Section VII	xliv

FOREWORD.

In previous annual reports the note on the health of the Army in India prepared by the Director of Medical Services in India was included in Volume I, and Volume II was entirely statistical. In the report for 1925 the note on the Army in India has been transferred to Volume II so that it may accompany the extensive statistical tables prepared in connection with it. Volume I will now contain sections dealing with the health of the civil population only; but certain statistical tables dealing with the health in jails will be included as usual in Volume II. It is requested that present recipients of Volume I only should indicate to me their future requirements in regard to Volume II on this basis.

The delay in the publication of this report has again been due to late receipt of certain provincial annual reports. The reports on hospitals and dispensaries for the Presidencies of Bombay and Bengal for 1925 were not received until the 18th and 20th July 1927, respectively, while the annual report of the Health Officer of Calcutta for 1925 was not received until the 9th September 1927. It is hoped that these delays will be avoided in future.

ANNUAL REPORT OF THE PUBLIC HEALTH COMMISSIONER WITH THE GOVERNMENT OF INDIA FOR 1925.

To

THE HON'BLE KHAN BAHADUR

SIR MUHAMMAD HABIBULLAH, Kt., K.C.S.I., K.C.I.E.,

MEMBER FOR THE DEPARTMENT OF EDUCATION,

HEALTH AND LANDS.

SIR,

I have the honour to submit my annual report for 1925 on the state of the public health in British India.

SECTION I.

ON THE STATE OF THE PUBLIC HEALTH IN BRITISH INDIA.

Introduction.

1. As India possesses no system of general registration of sickness, the state of the public health can only be estimated by considering the information supplied in the provincial birth and death returns, in the reports of provincial administrative officers, of Directors of Public Health, of medical officers of health of municipalities and districts, and of Government and other medical officers, both central and provincial, who may be engaged on research or specialised work.

This section of the report, though it enters into much statistical detail, is not intended to be a resumé of the provincial work, but rather to serve as a guide to the reader in his selection of points in the provincial and municipal reports which require more detailed study. It will, however, enable provincial health to be studied with reference to the public health of India as a whole, and will serve to create the proper perspective in which to view the various provincial variations of ratios apart from those due to known epidemic causes.

The outstanding statistical data concerning the public health in British India during 1925 are briefly as follows:—

- (1) the birth rate fell from 34·45 per mille in 1924 to 33·65 per mille in 1925,
- (2) the death rate fell from 28·49 per mille in 1924 to 24·72 per mille in 1925,
- (3) the infantile death rate fell from 189 in 1924 to 174 in 1925.

The table which follows shows at a glance the corresponding rates for the same year or the previous year (in case of United States of America)

in England and Wales, Scotland, the Dominions, and United States of America. The table requires no explanation.

Country.	Year.	Birth rate per mille.	Death rate per mille.	Infantile death rate per mille (of infants under 1 year).	REMARKS.
India	1925	33·65	24·72	174	
England and Wales	1925	18·3	12·16	75	
Scotland	1925	21·3	13·4	91	
Australia (Commonwealth)	1925	22·9	9·47	57·0	
New Zealand	1925	21·17	8·67	39·36*	*(75 in 1900)
Canada (ex-Quebec)	1925	22·6	9·7	78·7	
United States of America (registration area).	1925	21·2	11·7	71·5	
Union of South Africa (White).	1925	26·6	9·5	68	

Population.

2. The population of British India within the registered areas has been stated in decennial periods and age-groups in the following two tables:—

A.—Population under registration.

Year.	Population for British India (under registra- tion).
1872	180,508,677
1881	184,998,433
1891	206,608,713
1901	224,280,118
1911	238,688,119
1921	241,419,723
1922	241,419,723
1928	241,469,026
1924	241,469,026
1925	241,469,026

B.—Population under registration by sex and age. (The figures against age-groups exclude Delhi and Ajmer-Merwara for which figures are not available).

Age-groups.	Males.	Females.	Persons.
All ages	123,943,591	117,525,435	241,469,026
0—5 years	14,849,405	15,376,806	30,226,211
5—10 „	18,248,639	17,477,030	35,725,669
10—15 „	15,355,643	12,529,322	27,884,965
15—20 „	10,512,220	9,718,892	20,231,112
20—30 „	20,413,565	20,944,963	41,358,528
30—40 „	18,029,771	16,377,084	34,406,855
40—50 „	12,539,172	11,316,364	23,855,536
50—60 „	7,619,020	7,118,253	14,737,273
60 and upwards	6,283,478	6,563,357	12,846,835

NOTE.—In 1923, the opinions of the provincial public health authorities in India were obtained in regard to utilising the estimated population in intercensal years for the purpose of calculating birth and death ratios; but in view of the general opinion held regarding its vagaries from uncontrollable causes, it was agreed to continue such calculations on the actual census figures.

Rainfall and other weather conditions.

3. Through the courtesy of the Director General of Observatories the details of the chief features of the rainfall and other weather conditions during 1925 are appended.

Taking the year as a whole, rainfall was within 25 per cent. of the normal except in Orissa and the Madras Coast North, where it was in moderate excess, and in Baluchistan, Sind, Rajputana and Gujarat where it was in large defect.

I. The cold weather rainfall of January and February was in very large defect in north-west India, which is ordinarily the chief region of winter rains. Over the rest of the country also, excluding Bengal and Assam, there was very little rain. Averaged over the plains of India the rainfall of the period was in defect by 60 per cent.

II. During the hot weather months, March to May, weather was much drier than usual in north-west India. In Burma, north-east India, the Peninsula and the central parts of the country, rainfall was in excess so that over the country, as a whole, there was an excess of 26 per cent. in the rainfall of the period.

III. The principal feature of the monsoon season, June to September, was its early incidence in north-west India about the end of May, and

its complete withdrawal from that division after the 14th August. The total rainfall of the period was within 25 per cent. of the normal except in Orissa where there was a moderate excess, and in Gujarat, Berar, Sind and Rajputana, where there was a moderate or large defect. Averaged over the plains of India, the monsoon rains were in defect by 4 per cent.

IV. The north-east monsoon began early in the south of the Peninsula, and rainfall was in large excess in Madras and Hyderabad. There was also a large excess in Orissa, the Punjab South-West, the North-West Frontier Province and Berar; and a large defect in Assam, Bihar, the United Provinces, Baluchistan, Sind, Rajputana West and Gujarat. The seasonal rainfall for October to December, over the country as a whole, was in excess by 8 per cent.

V. In north-west India winter conditions began earlier than usual with abundant rain in the first week of November followed by rainless settled weather in northern India until the end of the year.

Agricultural and Economic Conditions.

(Vide *Agricultural Department publications and communiqués on seasonal and crop reports*).

4. *Central Provinces and Berar (1924-25)*.—The meteorological conditions were generally favourable to rabi but less so to kharif. The out-turn in the Central Provinces stood at 97 per cent. of the average yield (98 in 1923-24) and that in Berar at 82—the same as in 1923-24. The average annual rainfall for the Central Provinces was 43·72 inches (57 years' average = 48·72); for Berar 32·22 (31 years' average = 32·70 inches).

31,627,000 acres were under cultivation as compared with 31,522,000 acres in 1923-24 and 31,536,000 acres (average) during the five years ending 1917-18. The area sown with kharif or autumn crops rose from 18,546,406 to 19,152,898, *i.e.*, by 3 per cent. The increase was shared by all the districts except Damoh, Balaghat, Bilaspur and Akola. The rice area was nearly the same as in 1922-23 and 1923-24. In the Central Provinces cotton was sown over 1,849,947 acres against 1,598,243 acres in 1923-24—(+16 per cent.); Berar showed an increase of 2 per cent.—due to favourable climatic conditions and to high prices which induced many cultivators to grow the crop on land ill-suited to it. The area under wheat crop increased by 2 per cent. in the Central Provinces.

The total area irrigated fell from 1,101,586 to 1,015,686 acres—(–8 per cent.). Irrigation in Berar is mainly confined to the watering of garden crops from wells. Wholesale prices of juar, rice, wheat, gram and linseed rose, while those of cotton and til declined. The generally favourable conditions led to an all-round increase of live-stock, though contagious diseases caused many deaths. The year was one of further recovery from the recent scarcities. The agricultural labourers had ample employment and commanded fairly high wages.

North-West Frontier Province (1924-25).—Rainfall being everywhere much below the average in June (Kohat and Tochi had none) the sowing operations, especially in unirrigated tracts, were adversely affected, particularly in Bannu and Dera Ismail Khan districts, where *barani* cultivation predominates. Copious and well-distributed rain in Septem-

ber was of great benefit. From October 1924 to April 1925, rainfall was either scanty, below the normal or meagre; in December only was it good. Hailstorms damaged the crops in certain villages. Unirrigated standing crops and orchards in Peshawar district and the zaid-rabi crops in Dera Ismail Khan district were also damaged by cold and high winds. Cholera, malaria and plague also helped to retard progress. Agricultural operations generally were not appreciably affected.

The total area sown was 2,514,124 acres—3 per cent. less than in 1923-24; the area harvested was 2,008,097 acres—6 per cent. below the previous year and 3 per cent. below the normal. 20 per cent. of the area sown proved a failure, this being 10 per cent. in excess of that for the previous year and 1 per cent. above the normal. The total area of crops irrigated decreased by 11,087 acres.

The kharif harvest, with scanty rain in August 1924, was 7 per cent. above normal. Climatic conditions were very unfavourable for the rabi sowings, and the harvest was 8 per cent. below normal.

Prices of food grains were generally higher, due partly to increased demands from abroad and partly to the spring crop outturn being much below normal. Stocks of all food grains were generally sufficient to meet local requirements. Fodder was adequate; but drinking water was not procurable in certain *damam* villages in Dera Ismail Khan district owing to the drought.

The year was not a healthy one for cattle, and cases of contagious diseases rose from 16,668 in 1923-24 to 29,260.

The condition of the agricultural population was satisfactory throughout the province. The opening of the Razmak line has tended to increase the demand both for skilled and unskilled labour in the Bannu District.

Punjab (1924-25).—The conditions were very favourable for rabi sowings, except on the banks of the Jumna, where the country remained sodden with the previous floods. Unfavourable spring conditions, however, prevented the rabi crop from being as large as might have been anticipated from the wide sowings.

The cotton acreage increased markedly; the area under irrigated wheat remained nearly constant at between $4\frac{3}{4}$ and 5 million acres; that devoted to irrigated fodder crops remained stationary.

There was an all-round recovery of prices. Cattle were generally in good condition. The agricultural population were said to be well off and economically improving. Wages rose generally, *pari passu*, with the rise in the price of food stuffs.

The drainage board is tackling the problem of water logging in the upper canal areas and parts of Ambala division where the deforestation of the low hills has added to the difficulties.

Bengal (1924-25).—The bhadoi crops, with an outturn of 73 per cent., were fairly satisfactory in North Bengal. The season was not uniformly favourable for jute. A normal crop of rice was reaped in North Bengal districts, Burdwan and Khulna; elsewhere it was only fair. The provincial outturn was 86 per cent. of the normal.

The rabi season was a fair one, the total cropped area being estimated at 27,747,200 acres.

Prices were slightly affected by flood damage to *bhil aus* rice in East Bengal and to the paddy crop in South India. The main cause of high prices was a world-shortage of food grains and the consequent increased export of rice from Bengal. The general condition of the agricultural people was fair.

Bihar and Orissa (1924-25).—The weather conditions, especially in Bihar, were not favourable for the bhadoi crops owing to late and insufficient rainfall at the sowing time, and to continuous and excessive rainfall during the period of growth. The outturn per acre was 71 per cent. on an area about 1/7th below normal. The total area cropped during the year, including that cropped more than once, was estimated at 30,456,500 acres. The prices of food grains were generally higher than last year. The stocks of food grains at the end of the year were generally sufficient.

Hæmorrhagic septicæmia was reported from all districts excepting Angul. Anthrax appeared in six districts. Foot and mouth disease was prevalent in all districts. Preventive inoculation was appreciated.

There was no lack of employment for agricultural labourers.

Burma (1924-25).—The season was good for rice and other important crops. The Delta enjoyed a particularly favourable year and a bumper crop. The areas sown and irrigated show an increase of 437,877 and 8,944 acres, respectively, over the previous year.

The net areas matured and assessed were 15,186,938 and 15,899,485 acres, respectively. Prices were lower than those of last year.

The year was a healthy one for cattle, though in Akyab, Thayetmyo and Meiktila, the mortality was above the normal, and Meiktila suffered from outbreaks of rinderpest and anthrax.

No important changes in agricultural conditions have been reported. Some consider that a deterioration of the soil is going on on account of continuous cropping. Kyaukpyu suffered from inundation of sea-water due to neglect of the bunds.

Bengal (1925-26).—In Northern and in parts of Eastern Bengal, owing to excessive rain, the season was unfavourable for autumn crops but favourable for winter rice and fair for spring crops; in Western Bengal, it was unfavourable largely owing to drought. Conditions for bhadoi crops (excepting jute) were normal in East Bengal during the monsoon, and a fair crop was reaped for the whole province, being 73 per cent. of normal. For jute the weather was generally favourable in East Bengal, excepting Mymensingh, very unfavourable in North Bengal, and favourable in West Bengal. A good winter rice crop was reaped in East and North Bengal, a fair one in West Bengal—the outturn for the province being 92 per cent. of normal (86 in 1924-25). A fair rabi crop was reaped, despite the drought towards the end of 1925. Conditions were generally favourable for cotton, the crop being satisfactory except for slight damage in Tripura State. Prices of rice receded somewhat with the winter paddy harvest, but ruled fairly high throughout. Jute prices reached unprecedentedly high levels in apprehension of a short crop. The prices of food grains and of all important articles of daily use remained high throughout the year.

Bihar and Orissa (1925-26).—The year was disappointing except to the growers of jute. Abnormally heavy rain in April and May gave

promise of good bhadoi crops in the eastern area and of an unusually good crop of broadcasted paddy in Orissa and Chota Nagpur; but floods in Orissa, and drought in June in South Bihar and in September in Chota Nagpur, more than discounted this promise. The bhadoi crops were fair except in Purnea and Palamau and in parts of Cuttack, Puri, and Balasore, where some damage was done by floods. The outturn per acre of the bhadoi crops, including autumn rice and maize, was estimated at 83 per cent., on an area about 11 per cent. below the normal. The total area cropped during the year (including that cropped more than once) amounted to 30,214,800 acres.

The prices of food grains generally ruled higher than last year in Orissa, Chota Nagpur and Bhagalpur divisions and were slightly easier in most districts of the Patna and Tirhut divisions. The stocks of food grains at the end of the year were generally sufficient.

The condition of cattle in general was satisfactory, though the floods in Puri caused some loss.

No permanent deterioration of land was reported from any area. Employment for agricultural labourers was steady and their condition was generally satisfactory, except in parts of Sadr Sub-Division of Puri where gratuitous relief had to be given.

Burma (1925-26).—On account of the rain scarcity the season was a poor one for rice and other important crops.

The net area irrigated which was 1,427,127 acres decreased by about 1.56 per cent.; the gross area irrigated which was 1,461,656 acres—decreased by about 1.47 per cent. The gross area sown was 16,875,011; that matured was 15,873,935 acres.

The price of paddy was higher than last year. In most districts with a poor outturn of the sesamum crop, prices soared. Prices of cotton were lower than in 1924-25 in consequence of a fall in world prices.

The year was generally a healthy one for cattle.

A few districts report slight deterioration of land due to continuous cultivation—particularly the irrigated areas of Kyaukse and Minbu. Improvements and extensions of irrigation systems have been carried out in various districts. River-training operations by the forest department continue; in Tharrawaddy, these operations are reported to be agriculturally beneficial because the silt-laden water can be directed over depressions, which are thus gradually reclaimed and cultivated. Prices were high as was the cost of living and of labour.

Births.

5. *British India.*—Births numbered 8,125,408 or 191,995 less than the figure for 1924, the birth-rate being 33.65 against 34.45 in 1924 and 33.26, the mean of the previous five years. The decrease though slight was shared by all the provinces, except Bengal where the increase was .1. With the exception of North-West Frontier Province, Coorg and Burma, all provinces showed an increased birth-rate as compared with the quinquennial mean.

In the following table, the proportion of male to female births is given for the three years 1923 to 1925, female births in each case being taken as 100. Though defective registration may partly account for the varia-

tions we must look for other causes some of which have been indicated very clearly in the census *report.

Proportion of males born to every one hundred females.

Provinces.	1925.	1924.	1923.
Delhi	108	110	111
Bengal Presidency	108	107	108
Bihar and Orissa	105	105	105
Assam	107	107	106
United Provinces	112	112	112
Punjab	112	113	112
North-West Frontier Province	130	130	128
Central Provinces	105	105	105
Madras Presidency	104	104	104
Bombay Presidency	109	108	109
Burma	106	106	106
Coorg	105	107	108
Ajmer-Merwara	115	119	114
British India	110	108	108

Birth ratios exceeded death ratios in all the provinces except Coorg, where the death rate was in excess by 3.05. Central Provinces (16.63), Delhi (11.94), Bihar and Orissa (11.9), Bombay (11.0), Punjab (10.09), Ajmer-Merwara (9.68) and Madras (9.3) were among the big birth increases.

Deaths.

6. *British India*.—Deaths numbered 5,967,918 as compared with 6,879,286 in the preceding year—a decrease of 911,368. Registered births exceeded registered deaths by 2,157,490 against 1,438,117 in 1924; all the provinces, with the exception of Coorg, having contributed to this in the following order:—Bihar and Orissa (406,018), Madras (381,819), United Provinces (361,027), Central Provinces (231,380), Bengal (218,624), Bombay (210,821) and the Punjab (207,224).

The death rate was 24.72 as against 28.49 in 1924 and a quinquennial mean of 27.74. The urban death rate was 29.65 against 31.65 and the rural rate was 24.30 against 28.19 in 1924. In Delhi, Bengal and Bihar and Orissa the rural rates exceeded the urban ones; in Coorg the urban rate exceeded the rural one by 26.37, in Burma by 17.45 and in United Provinces by 11.54.

The following table, on lines similar to previous years, presents the important facts in regard to births and deaths :—

Provinces.	BIRTHS.			DEATHS.			RATIO OF DEATHS PER 1,000 OF POPULATION.			MEAN DEATH RATE DURING PREVIOUS FIVE YEARS.		
	Total number.	Ratio per 1,000 of population.	Mean ratio during previous five years.	In municipalities and towns.	In districts excluding towns.	Total.	In municipalities and towns.	In districts excluding towns.	Total.	In municipalities and towns.	In districts excluding towns.	Total.
Delhi	20,824	41·60	...	8,119	6,730	14,849	28·88	33·90	29·66	*33·38	31·80	33·71
Bengal Presidency	1,377,097	29·6	28·8	74,058	1,084,415	1,158,473	23·9	25·0	24·9	24·2	28·0	27·7
Bihar and Orissa	1,211,747	35·6	35·0	27,277	778,452	805,729	23·2	23·7	23·7	28·0	28·5	28·5
Assam	199,261	29·08	29·16	3,525	150,826	154,351	23·63	22·50	22·52	23·48	26·02	25·95
United Provinces of Agra and Oudh	1,485,275	32·73	34·57	107,048	1,017,200	1,124,248	35·55	24·01	24·78	39·38	30·07	30·69
Punjab	822,076	40·06	40·9	66,990	547,862	614,852	32·30	29·70	29·97	31·71	30·58	30·70
North-West Frontier Province	57,362	26·9	26·8	5,214	37,108	42,322	24·55	19·29	19·81	28·71	25·78	26·07
Central Provinces and Berar	610,732	43·90	40·54	42,396	336,964	379,362	31·39	26·82	27·27	38·07	35·01	35·31
Madras Presidency	1,382,477	33·7	30·7	150,616	849,942	1,000,558	29·2	23·7	24·4	26·6	21·3	21·9
Coorg	3,093	18·88	27·77	493	4,556	5,049	55·76	29·39	30·82	47·04	38·99	34·44
Bombay Presidency	664,384	34·66	33·29	101,245	352,318	453,563	27·04	22·84	23·66	32·50	24·97	26·86
Burma	274,644	25·38	29·98	41,951	160,982	202,933	34·23	16·77	18·75	37·34	20·54	22·43
Ajmer-Merwara	16,436	33·18	31·08	Not available	Not available	11,639	Not available	Not available	23·50	Not available	Not available	13·56
British India	8,125,408	33·65	33·26	628,934	5,327,345	5,967,918	29·65	24·30	24·72	31·22	27·50	27·74

* For Delhi Municipal town.

Registration.

7. In my report for 1924 I noted at length on the defects of the present system and would therefore only call attention to the remarks then made in paragraph 7, Volume I of the 1924 report as they are equally applicable to the situation as it stands to-day.

The checking which has been attempted in the various provinces varies according to the ideas of the public health departments concerned. The prevailing impression, one gathers, is that little progress is able to be recorded anywhere; and it is very difficult, with economic and other conditions being what they are, to visualize any very rapid or drastic amelioration. In view of their interest, I have again tabulated such checking figures as we have obtained from the different provinces.

Vital statistics were checked by the usual agencies and the facts emerging have been tabulated, though the estimated percentages of error should be accepted with caution in view of the differences in the methods of determination:—

Province and Agency.	Total numbers of births and deaths verified.	PERCENTAGE OMISSION ERROR.				REMARKS.
		Births.		Deaths.			Beth.
North-West Frontier Province—						
(a) Tahsildars, etc. .	8,639	...	...	...	1.5	
(b) Vaccination Staff	40,749	...	...	...	...
	births	...	...	...	...
	34,740	13.9	1.9	8.4		
	deaths	...	...	...	...
Bengal Presidency .	43,414	2.6	2.3	...	...
United Provinces—						
(a) Local Staff	242,485	4.55	3.27	...	...
(b) Vaccination Staff	1,063,983	...	...	...	...
Madras Presidency .	...	...	...	...	...	72,432 un-registered births were detected.
Bihar and Orissa .	28,782	...	...	1.2		In compulsory areas.
Punjab—		M.	F.	M.	F.	
(a) Vaccination Staff	1,90,025	1.77	1.96	0.88	0.98	...
(b) Revenue „		2.22	2.10	1.49	1.48	...
Assam—						
(a) Urban . .	Not available	4.47	2.87	...	...
(b) Rural . .	63,670	...	...	4.66		
Burma . .	395,013	...	...	.51		
Central Provinces—						
(a) Revenue Officers	95,829	...	...	.50		
(b) Civil Surgeons, etc.	224,234	...	...	.13		
(c) Vaccination Staff	1,023,304	...	...	.20		
(d) Police Officers .	211,047	...	...	.21		
(e) Director of Public Health.*	29,069	...	...	1.57		

* Also checked 223 entries of still-births and detected 68 omissions.

Still-births.

8. These continue to be recorded over a very limited area in British India.

In the Bombay Presidency 10,862 still-births or 1·63 for every 100 live-births, were registered as against 11,141 or 1·63 in 1924; while the following percentages of still-births to live-births show the range of variation:—City of Bombay 8·53, Kanara district 5·04, Dharwar district 3·43, Surat district 2·84, Kolaba district 2·72, Bijapur district 2·66, Belgaum district 2·22, Karachi district 2·17, and Upper Sind Frontier district 0·26 per cent. of live births.

United Provinces.—14,404 still-births were recorded—(15,610 in 1924)—Gorakhpur district again heading the list with 3,054; the cause of this is under investigation.

Burma.—There were 1,941 still-births in urban and 524 in rural areas. Rangoon and Mandalay towns with 467 and 382 cases account for the majority of these. Amongst rural areas Amherst returned 99, Magwe 98, Minbu 86 and Henzada 85.

Central Provinces.—13,146 still-births were recorded (13,876 in 1924). The Chhattisgarh and Berar districts returned the largest numbers. In some districts venereal disease was said to be responsible for many.

Madras Presidency.—Still-births numbered 19,859 (10,747 males and 9,112 females). The following districts returned the highest percentages:—

Districts.	PERCENTAGES OF STILL-BIRTHS DURING	
	1925.	1924.
Malabar	13·0	13
Tanjore	9·1	10
South Kanara	6·9	9
Madras	6·6	7
North Arcot	6·2	6
Chingleput	4·8	5

Bengal Presidency.—62,281 still-births were reported (64,159 in 1924); in this connection much is expected from the improvement now taking place in dai training.

Infant Mortality.

9. 1,416,983 deaths or 23·7 per cent. of total mortality occurred during the first year of life against 1,569,128 and 22·8 per cent., respectively, in 1924. In England and Wales the corresponding figures for 1924 and 1925 were 11·6 per cent. and 11·3 per cent., respectively.

Details of infant mortality are given below :—

	Under month.	Per cent. of total.	1-6 months.	Per cent. of total.	6-12 months	Per cent. of total.	TOTAL.	Ratio per 1,000 of births.	Ratio in 1924.
Bengal Presidency	132,966	53.28	63,051	25.26	53,565	21.46	249,582	179.15	184.17
United Provinces	123,188	47.8	78,878	30.3	58,613	22.5	260,679	175.51	192.0
Delhi	1,331	33.23	1,255	31.34	1,419	35.43	4,005	192.33	179.33
Assam	19,205	55.28	10,198	29.35	5,339	15.37	34,742	174.45	184.75
Bihar and Orissa	95,100	57.01	45,535	27.30	26,177	15.69	166,812	137.76	158.4
Madras Presidency	130,996	52.4	59,896	23.9	59,261	23.7	250,153	180.94	179.21
Bombay	44,784	41.61	35,453	32.94	27,997	25.45	107,634	162.01	191.17
Central Provinces	65,356	52.3	30,623	24.5	28,882	23.1	124,861	204.44	234.94
Punjab	69,346	44.94	44,025	28.53	40,941	26.53	154,312	187.71	212.57
North-West Frontier Province	3,643	45.7	2,748	31.0	1,590	19.9	7,981	139.13	161.36
Burma	15,118	29.1	25,998	50.1	10,790	20.8	51,906	189.99	197.86
Coorg	546	60.13	199	21.92	163	18.00	908	293.56	331.03
Ajmer-Merwara	992	29.11	1,239	36.35	1,177	34.54	3,408	207.35	227.45
TOTAL	702,571	49.58	399,098	28.17	315,314	22.25	1,416,983	174.40	188.66
Ratio per 1,000 births	86	...	49	...	39	...	174	...	...
Ratio in England and Wales . . . . .	...	...	...	...	...	...	...	75	75

The infantile death rate calculated on the births recorded during the year was 174 as against 189 in 1924, 176 in 1923 and 175 in 1922. A decrease occurred in every province, except Delhi and Madras. In British India 702,571 (49.58 per cent.) of the infantile deaths occurred during the first month of life against 48.1 in 1924 and 49.5 in 1923. This equals 86 per 1,000 of live-births—a rate again in excess of the total infantile mortality rate in England and Wales, which was 75 per 1,000 births registered.

The number of infants dying within the first week has been ascertained in all provinces except Bengal, Delhi, Assam and the Punjab and is incorporated in the following table :—

Provinces.	Deaths under one week.	Ratio per 1,000 live- births.	Percentage of deaths under one month.	Percentage of total infant deaths.
United Provinces	79,962	53.84	64.91	30.67
Bihar and Orissa	69,638	57.47	73.23	41.75
Madras Presidency	88,848	64.27	67.82	35.62
Bombay Presidency	22,817	34.34	50.95	21.20
Central Provinces	38,925	63.73	59.56	31.18
North-West Frontier Province	2,003	34.92	54.98	25.10
Burma	7,418	27.01	49.07	14.30
Coorg	407	131.60	74.54	44.82
Ajmer Merwara	573	34.86	57.76	16.81
TOTAL	310,591	54.43	64.75	31.88

NOTE.—Deaths under one week for Delhi, Assam, Punjab and Bengal are not available.

Compared with 1924 these figures show a decrease of 31,638 deaths under one week. The ratio, per 1,000 of live-births, has fallen everywhere except in Madras.

The table of infant mortality rates for certain towns which are recording has been continued and shows that the rates have increased in 8 towns and decreased in the others. The rate in Poona has again fallen.

Towns.	INFANT MORTALITY RATES.			
	1922.	1923.	1924.	1925.
Bombay	288	269	275	358
Calcutta	287	295	317	326
Madras	308	254	264	279
Rangoon	328	342	353	352
Howrah	250	264	278	291
Dacca	248	237	227	222
Poona	1,064	592	1,042	611
Sholapur	233	233	253	252
Surat	400	386	350	330
Ahmedabad	299	298	344	323
Karachi	252	218	256	222
Shikarpur	320	338	318	325
Cawnpore	451	495	477	420
Allahabad	244	280	239	236
Benares	264	298	275	253
Lucknow	280	288	302	260
Nagpur	275	251	285	258
Jubbulpore	228	283	261	259
Moulmein	212	245	234	202
Mandalay	310	324	318	287
Puri	335	335	413	419
Lahore	218	238	214	222
Delhi	Not available.	226	174	183

Causes of Infant Mortality.

10. The interesting table from the annual report of the Executive Health Officer, Bombay City, is reproduced for 1925 as it represents continuity of observation on the causes of infant mortality and shows what is happening there:—

Disease.	1923.	1924.	1925.	Mean of five years, 1920-24.
Small-pox	87	218	105	88
Measles	27	56	45	39
Malaria	19	17	23	21
Remittent fever and fever not defined.	131	122	103	178
Diarrhœa and enteritis . .	662	674	480	731
Dysentery	47	58	34	56
Infantile debility and malforma- tion including premature birth.	3,767	3,953	3,129	3,869
Respiratory diseases . .	2,388	2,685	2,178	3,121
Convulsions	1,106	1,016	827	...
<i>Total</i>	<i>8,234</i>	<i>8,799</i>	<i>6,924</i>	<i>...</i>
Other causes	398	357	288	...
<i>All causes</i>	<i>8,632</i>	<i>9,156</i>	<i>7,212</i>	<i>9,934</i>

Maternity and Child Welfare.

11. This will be considered under the two headings of maternal mortality and welfare:—

A. *Maternal Mortality*.—The following figures and notes are valuable:—

Province.	Areas.	MATERNAL (CHILD-BIRTH) DEATH RATE PER 1,000 BIRTHS DURING THE YEARS		
		1923.	1924.	1925.
United Provinces	All towns over 10,000 .	6.4	7.3	6.56
	Agra	8.3	6.8	7.9
	Cawnpore.	7.1	9.1	8.6

Province.	Areas.	MATERNAL (CHILD-BIRTH) DEATH RATE PER 1,000 BIRTHS DURING THE YEARS.		
		1923.	1924.	1925.
United Provinces— <i>contd.</i>	Allahabad	8.1	9.9	4.6
	Benares	7.1	6.8	8.8
	Lucknow	10.0	10.1	6.2
Assam	All towns over 10,000 . .	7.6	13.1	11.9
Bombay Presidency	Rural Areas	5.5	5.0	4.6
	All towns	12.0	11.4	9.1
	Poona City	26.6	37.4	17.8
	Surat	22.9	16.6	14.2
	Ahmedabad	12.1	13.5	11.5
	Karachi	13.9	15.3	10.5
	Hyderabad	11.4	10.34	5.8
	Larkana	51.2	48.06	53.2
	Sukkur	25.9	20.90	21.8
	Shikarpur	124.9	64.1	41.2
Central Provinces .	Rural Areas	4.4	4.6	3.8
	All towns	7.4	8.7	7.0
	Nagpur	5.4	7.1	5.1
	Jubbulpore	5.4	6.18	3.0
	Burhanpur	11.7	15.9	10.8
	Raipur	21.3	14.52	8.5
	Karanja	34.0	23.70	17.5
Madras Presidency .	Rural Circles	1.0	.8	1.7
	All towns	9.6	8.8	9.7
	Conjeeveram	19.4	8.7	19.6
	Coimbatore	13.2	21.5	18.4
	Guntur	19.1	12.02	32.8
	Ellore	44.1	20.1	15.6

Province.	Areas.	MATERNAL (CHILD-BIRTH) DEATH RATE PER 1,000 BIRTHS DURING THE YEARS		
		1923.	1924.	1925.
Madras Presidency— <i>contd.</i>	Bezwada . . .	21·8	18·7	11·8
	Madras City . .	14·7	14·1	15·2
	Madura . . .	12·3	15·6	14·5
	Cuddalore .. .	11·5	13·4	19·2
	Kumbakonam . .	15·4	18·0	17·1
	Tanjore . . .	16·2	20·5	14·7
	Negapatam . . .	27·5	22·1	15·4
	Palamcottah . .	23·0	16·6	14·6
	Trichinopoly . .	14·2	18·1	17·0
	Vizagapatam . .	19·1	6·83	9·0
Burma . . .	All towns . . .	10·7	9·1	10·1
	Rangoon town . .	3·4	2·6	1·9
	Bassein . . .	14·8	11·7	8·0
	Moulmein . . .	16·7	8·9	8·1
	Mandalay . . .	11·0	10·1	7·9
	Myingyan . . .	44·9	12·48	20·7
	.....	4·6	6·0	5·7
Bombay City .	.....	4·3	4·9	4·6

In "all towns" with over 10,000 inhabitants in the United Provinces, Assam, Bombay, Central Provinces and the rural areas in Bombay the death rates decreased whilst in the rural areas in Madras and "all similar towns" in Burma and Madras they increased.

Bombay Presidency.—The number of child-birth deaths decreased from 4,059 in 1924 to 3,502 during 1925; while Bombay city registered 114 deaths (129 in 1924); in other words in 1925 in the Presidency one woman died in child-birth for every 190 live-births (1 for 168 in 1924). The urban and rural figures were one per 111 and 218, respectively, against 88 and 200 in the previous year.

Amongst the Collectorates the mortality from this cause was again greatest in Kanara where for every 46 births one mother is said to have died. The towns in Sind continue to show inordinate rates: Larkana one maternal death in every 19 births, Shikarpur 1 in every 24, and Sukkur 1 in every 45. These were similarly mentioned in 1924 report.

A comparison with maternal mortality figures for England and Wales during the years 1912 to 1925 can be made by consulting the table appended.

Year.	1912.	1913.	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.
England and Wales	3.78	3.71	3.95	3.94	3.87	3.66	3.55	4.12	4.12	3.71	3.53	3.60	3.70	3.88

NOTE.—The rates are per 1,000 births.

Madras Presidency.—3,788 deaths from causes associated with child-birth were registered, but the mortality from this cause was thought to be much understated. The figures for the five years ending 1925 are given below :—

—	1921.	1922.	1923.	1924.	1925.
Deaths due to child-birth .	1,864	2,613	2,892	2,601	3,788
Death rate per 1,000 live births .	1.7	2.1	2.1	1.8	2.7

Director of Public Health has recently pointed out that these ratios are probably quite inaccurate owing to imperfect registration, and in this I agree with him. He says that “Local estimations of maternal death rate in this Presidency have been as high as 17.5 deaths per 1,000 births (England 4.0 per 1,000) and he further says “Thousands of women are therefore needlessly sacrificed year after year because skilled medical attendance is not available and because the custom is to depend on the barbarous services of the *dai* who, steeped in superstition, carries on her profession without let or hindrance and in complete disregard of the simplest precautions against sepsis”.

Central Provinces and Berar.—2,520 deaths were recorded—426 in municipal towns and 2,094 in rural circles.

Bengal Presidency.—2,790 deaths (1,972 in 1924) from this cause were reported.

B. Maternity and Child Welfare Work.—A more detailed account of the various provincial activities on lines similar to those of last year follows. It shows roughly the position arrived at in the various provinces.

Bengal Presidency.—Keen interest in infant welfare work was shown by almost all the district boards, the majority of municipalities and other local bodies and this was shown specially by the organisation of baby weeks. In addition to the Calcutta exhibition about 26 baby week

exhibitions were organised in the mufassal. The provincial public health department helped with exhibits, charts, lantern slides, cinematograph films and lecturers.

Twelve indigenous dais attended labour class in Birbhum district and received training while two dai-training centres were opened in the rural areas in Dacca district and two in Chittagong district. Two classes for the training of dais were held in Hooghly district; in 24-Parganas two midwives were appointed to train village dais; in Nadia 9 dais were trained; in Rajshahi training of dais in elementary midwifery was introduced.

United Provinces.—The governing body of the United Provinces branch of the All-India Maternity and Child Welfare League held one meeting during 1925. The local Government sanctioned Rs. 10,000 for the improvement and Rs. 6,000 for the training of dais; also Rs. 10,000 for the purchase of models, for the opening of fresh centres and for propaganda work. The Victoria Memorial Scholarship Fund also sanctioned a grant of Rs. 3,300. Government grants were spent in helping the centres at Jhansi, Gorakhpur, Cawnpore, Saharanpur, Bijnor, Fatehpur and Bareilly.

The Allahabad scheme gained in popularity. The infantile mortality rate during 1925 was 5 per cent. less than the quinquennial average. Out of 6,118 births recorded, 1,526 maternity cases were attended by the maternity and child welfare staff. This work of dai improvement was carried on under the charge of two resident midwives. 45 lectures were given to the dais and four probationer midwives were said to be under training.

At Bareilly, Mrs. Stubb's Maternity and Child Welfare Society conducted 1,299 deliveries. The mortality among infants thus attended was 129 per mille. The provincial branch of the Indian Red Cross Society sanctioned Rs. 500 for the institution of a centre at the Cantonment General Hospital in the Sadar Bazar of Bareilly Cantonment.

The centre at Dehra Dun established in December 1924, did good work. The midwives paid 10 to 15 house visits daily, discovered expectant mothers and gave them elementary lessons on hygienic conditions and on the care of the baby. Expenses were met from the publicity funds, public donations and municipal contributions. Lectures were given to dais in 51 classes.

Cawnpore has five centres, two of which, financed and managed by the British India Corporation, are for the workers of the Cooper Allen and Woollen Mills, two are run by the municipality and one privately. 426 confinement cases were attended by the staff of the three public centres.

Jhansi's two centres—opened in November 1925—were able to arrange 600 home visits and to conduct 50 cases through dais.

Lucknow has three centres, which conducted 1,152 maternity cases with 52 (4.5 per cent.) infant deaths. Proposals were drafted for re-organisation of the Lucknow Maternity Welfare League.

Meerut centre was discontinued in August 1925.

Gonda centre conducted 45 cases; 28 being sent to hospital. Pilibhit scheme is said to be making steady progress. Agra has a baby clinic

which treats children up to 10 years of age for minor ailments, and is financed by the municipal board and public subscriptions. Muttra has a maternity nurse who attended 20 deliveries. Bahraich municipal board has engaged a midwife.

The scheme for the training of a superior class of midwives introduced at the Dufferin and Women's hospitals at Gorakhpur, Fyzabad, Meerut, Aligarh, Moradabad, Allahabad, Bareilly, Benares, Cawnpore, Agra and Lucknow is said to be making steady progress and the expenses were met by the United Provinces branch of the League out of the Government grant of Rs. 6,000; 48 midwives were enrolled, of whom 10 passed, 11 left, 7 failed and 20 were still under training.

Baby weeks were held in 38 places in the province; and magic lantern demonstrations and lectures were held for *pardah* ladies.

Burma.—The administration of the Child Welfare Endowment Fund remained in the hands of the Burma branch of the Indian Red Cross Society, which contributed small amounts to various local societies. The societies at Rangoon and Moulmein received the usual Government grants.

Baby weeks were held, as formerly, in Rangoon, Mandalay, Moulmein, Sandoway and Bassein; and 11 other towns held them for the first time. The Red Cross Society gave financial aid to the baby weeks at Rangoon, Mandalay, Pegu, Sandoway and Bassein.

The midwives of the society at Rangoon attended 1,452 expectant mothers—1,184 children being born alive, of whom 73 died within the first year, 18 under 6 months and 49 under one month. 270 women were attended for abortion and miscarriage. No maternal deaths are said to have occurred.

The society at Kyaukse which was reorganised on more practical lines is said to need the services of a nurse. Moulmein employed three midwives and one supervising midwife who attended 530 mothers or 33 per cent. of the total births registered. The infantile mortality among children watched over by the society was 90 as against 263 for those outside its control. At Monywa, the society's nurse attended 31 maternity cases and 8 cases of abortion. The society hopes to erect a clinic in a few months.

At Taunggyi the new maternity home was occupied early this year and about half the births in the town were attended by the staff. 17 maternity nurses were under training at this home, which is maintained by grants from the Federation Chiefs of the Shan States, from the town fund and from private subscription. At Sandoway, the midwife attended 75 out of the 128 births registered. At Meiktila, the maternity ward nurse attended 26 confinements. Mandalay has one lady superintendent and 4 midwives who attended 397 confinements, at which 348 infants were born alive of whom 39 died. There were 14 cases of difficult labour. Proposals were under consideration to reorganise the society and maintain a maternity and infant welfare home.

Madras Presidency.—In municipal areas, 343 trained midwives attended 33,962 births; in rural areas 497 midwives attended 44,265 births. Maternity relief and child welfare centres increased from 45 in 1924 to 58 in 1925. The Trichinopoly Health Association maintained a welfare centres of its own. The Salem district board proposed to open additional centres in suitable places in the district though the local Government sanctioned the training of 4 lady health visitors for mufassal

municipalities, no suitable candidates were forthcoming. Health and baby weeks were held early in January throughout the Presidency.

Some recent remarks of the Director of Public Health in this connection are of great importance, and I therefore take the liberty of quoting them *in extenso*. *Inter alia* he asserts with confidence that this movement has appealed to the general populace in a way which has not been equalled by any other. He says:—

“The inauguration of the ‘National Health and Baby Week’ movement in this Presidency has brought the activities of the Public Health Department and the principles of hygiene and well-being to the notice of the rural population even in the most remote tracts. The Health Week has now been conducted during each of the last three years. All local bodies are advised to organise committees and, in particular, to enlist the co-operation and assistance of as many ladies as possible. A model programme for the week was drawn up by the Director of Public Health and circulated to all local bodies for their guidance. Funds amounting to over Rs. 86,000 were raised by public subscription, and, generally speaking, an increasing readiness to contribute towards the expenses of the ‘Week’ has become apparent, so that the total expenditure for the Presidency must have amounted to considerably more than a lakh of rupees. The interest aroused by these celebrations has been immense and that they are appreciated is evident from the ever-increasing support given to the movement by the public. Efforts are constantly being made to get local bodies to provide their Health Inspectors with magic lanterns and slides. Many have complied with this demand, but many more have made no response, and the lanterns and slides available with the Madras Health Council are constantly out on loan, and it has been impossible for the Health Council to comply with anything like the demands made on it for its lanterns, slides, literature, posters and leaflets. An endeavour is now being made to obtain pecuniary aid from Local Boards for the further development of the Madras Health Council’s work. The response has been fair. Although, therefore, it may be confidently asserted that a very promising beginning has been made with the health propaganda campaign, it will not be possible to make any rapid advance until additional funds are available.”

“The question of medical relief may receive brief mention. During the past year, a scheme of subsidising medical practitioners, on condition that they settle down in rural villages, has been introduced by the Madras Government, and although it is too soon to give any opinion regarding its ultimate success, there can be no doubt that, properly developed, it would be a great boon to many thousands of the people who are unable to spare the time to travel long distances to head-quarter hospitals and dispensaries in order to obtain medical aid.”

“In connection with the subject of maternity relief, the Madras Legislative Council has recently passed a Nurses’ and Midwives’ Registration Bill, but it remains to be seen whether this measure will effect any improvement.”

This presents a very vivid picture of the position in this Presidency, and I am in entire agreement with the conclusions of the Director of Public Health.

Central Provinces.—“National Baby Week” was held in 38 towns; 13 did not celebrate it owing to plague or other causes. The Director of Public Health remarks “that these Baby Week celebrations bring home to the public the appalling wastage of life which occurs in infancy, with the result that the local bodies and other prominent people think seriously of starting Infant Welfare Centres; but as a rule the enthusiasm only lasts for a short time and nothing eventuates. What is required is a sustained effort throughout the year by the establishment of Infant Welfare Centres supervised by qualified Indian ladies”. The registration of dais is under the consideration of Government.

Nagpur city has two municipal infant welfare centres of which Government meets half the cost; a third was opened under the auspices of the Nagpur branch of the Red Cross Society. Their work is said to consist of health visiting, infant clinics, training of dais, antenatal clinics

and mothers classes. A table showing the mortality rates among the visited and unvisited babies is appended.

—	Births.	Infant deaths under one month.	Mortality rate per 1,000 live-births.
Entire town	6,751	907	134.35
Cases visited	3,583	366	102.1
Cases unvisited	3,168	541	170.7

The number of births visited have steadily increased—from 860 in 1921, 2,465 in 1923, 2,900 in 1924 to 3,583 in 1925. Jubbulpore and Raipur have possibilities of welfare centres being established. Various municipal committees entertained female assistant medical officers and midwives who visited the houses in which births took place and gave advice to mothers on cleanliness, feeding of babies, etc.

Bombay Presidency.—The number of sanitary associations (10) remained unchanged. That at Karachi conducted 894 maternity cases (1,261 in 1924) of which one proved fatal, 43 were abortions, 8 miscarriages and 7 premature deliveries; 3,541 house to house visits were paid by the lady health visitors (5,658 in 1924); 11 patients were advised to attend hospital; dais under the supervision of the lady health visitors conducted 23 labour cases (57 in 1924).

In Hyderabad town the training of dais remained confined to 6 centres where 433 midwifery cases were conducted, 41 dais were undergoing instruction while 90 were at work. The Shikarpur association conducted 367 cases, delivered 6 public lectures and printed and distributed leaflets. Broach sanitary association arranged health exhibitions and sold pure milk to the people amounting to 4,042 maunds and 30 seers. The association in Ahmedabad organised magic lantern lectures.

The “health and baby week” movement was celebrated in many important towns. I quote the conclusions of the Director of Public Health regarding it:—

“There can be no doubt that this movement is arousing the interest of the public in many towns and doing much to concentrate attention on the appalling wastage of infant life and the backwardness of health work in general.”

Punjab.—The existing maternity and child welfare centres are financed by local bodies, the Lady Chelmsford League, the Red Cross Society and independent local committees only. Maternity and child welfare centres existed at Simla, Gurgaon, Palwal, Karnal, Lahore (3), Gujrat, Rawalpindi (2) and Campbellpur, while lady health visitors were employed by several local bodies. Miss Simon, the Principal of the Punjab Health school, inspected all local centres and conducted departmental propaganda. This branch of work was said to be gaining in popularity. The Punjab Health school which, though a private institution, is subsidised by Government, was said to be in financial difficulties. In this connection proposals for provincialising it will be submitted in due course.

Municipalities Specially reported on.

(With special reference to their vital statistics and maternity and child welfare activities.)

12. The facts and observations recorded in this paragraph represent a few of the more important aspects of this work in the municipalities specially noted on by municipal medical officers of health and have, therefore, a general interest.

United Provinces.—Dehra-Dun (1925-26).—The number of births was 971 and that of deaths under one year was 227.

Meerut (1925-26).—The registration of births and deaths is defective and the figures are unreliable. Four sub-registrars are badly needed. The number of births and deaths under one year was 2,658 and 501, respectively.

Muttra (1925-26).—Births numbered 2,214 and deaths under one year 525.

Agra (1925).—9,903 births were registered, birth rate 60·47 per mille. Deaths numbered 6,394; death rate 39·04. Deaths of children under one year of age numbered 1,938 (195·68 per 1,000 births).

Benares (1925).—9,799 births (50·15 per mille) and 9,017 deaths (45·15 per mille) were recorded. The infant mortality rate per 1,000 births amounted to 253·39 (275·01 in 1924), the actual number of deaths being 2,483. Seven dais were employed.

Cawnpore (1925-26).—The infant mortality rate was 420·22 (484·05 in 1924-25), the actual deaths under one year being 2,971. 7,070 births were recorded.

Lucknow (1925-26).—Total infantile mortality amounted to 2,605 (2,981 in 1924-25), the ratio per 1,000 births being 260·05 (301·56 in 1924-25). The number of births was 10,017 or 46·12 per mille as compared with 45·51 in 1924.

Bangalore Civil and Military Station (1925-26).—4,634 births with a rate of 38·96 were recorded. The death rate dropped from 31·94 in 1924-25 to 29·59 and the infantile mortality rate from 273·64 to 214·07—the lowest recorded for previous 27 years. The main causes of infantile mortality were said to be—Infantile convulsions (*Sequelae*) 168, diarrhoea 87, broncho-pneumonia 149, inanition 120, premature births 375, other causes 93. A lady doctor was added to the welfare work staff. The municipal commission granted Rs. 200 towards “baby week”; an outdoor ante-natal clinic was opened. The main items of work relating to maternity and child welfare are summed up as follows:—purchase and distribution of clothes to deserving women and children at the various clinics; the maintenance of two Apcar ante-natal wards and the emergency labour room; training of midwives—(two passed out creditably) and the management of two welfare clinics newly opened for the Indian Ranks and Followers of the Royal Artillery Brigade. 1,601 maternity cases were attended.

Burma.—Rangoon.—6,480 registered births (6,494 in 1924) and 12,373 deaths (11,448 in 1924) (ratios being 18·76 and 35·81 respectively) were recorded. The infant mortality rate was 351·85 per 1,000 births—352·63 in 1924. (a) Of the 1,696 births within the Corporation limits

215 confinements were treated at the Dufferin hospital; 1,127 of the confinements were attended by unqualified midwives; 236 by qualified midwives; 113 by the society for the promotion of infant welfare and 5 by relatives. (b) The position in regard to the 6,480 births registered was as follows:—1,416 were attended by qualified doctors or midwives, 938 were confined at the Dufferin hospital; 737 were attended by the society for the promotion of infant welfare and 3,213 were attended by unqualified midwives, etc., briefly 51.73 per cent. of confinements were attended by unskilled women, 48.27 per cent. by qualified midwives. Premature birth, mal-nutrition and convulsions, bronchitis and pneumonia caused 1,688 deaths out of 2,280 deaths of infants.

Bassein.—The infant mortality rate was 291.66 (312.44 in 1924, 300.78 in 1923, 352.82 in 1922 and 417.43 in 1920). In 1925, it was highest among the Burmese (191.49). Of a total of 1,128 confinements 595 were attended by qualified persons, 522 by unqualified ones and 11 were unattended. The four municipal midwives, who are said to be becoming popular, attended 514 confinements. A baby week was celebrated. The question of the formation of a local committee to supervise the registered midwives and nurses is under consideration.

Moulmein.—The death rate of infants who died in the first week of life was 62 per mille against 72 in 1924 and 69 in 1923; that of infants in the first month of life was 79 per mille—104 in 1924. The infantile mortality was 202 per mille against 233 in the preceding year. The midwives of the society for the prevention of infantile mortality attended 532 cases of births. A baby week was held in February 1925.

Bombay Presidency.—*Bombay City.*—The Executive Health Officer, Bombay municipality, gives a table which I reproduce below, showing births by months. The noteworthy feature is that the number of births registered is considerably higher from August to January.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
1923	1,903	1,557	1,588	1,485	1,534	1,485	1,569	1,697	1,786	2,029	2,076	2,286	20,995
1924	2,066	1,881	1,608	1,511	1,560	1,474	1,648	1,787	1,806	2,125	2,204	2,088	21,838
1925	1,871	1,624	1,524	1,417	1,543	1,367	1,514	1,630	1,814	1,974	1,999	1,941	20,268

31,968 deaths were registered or 25 per mille against 38,774 (31 per mille) in 1924. The death rate like the birth rate, is invariably high among the poorer classes. 1,716 still-births were recorded. The infant mortality per 1,000 live births was 356—419 in 1924 and 481, the decennial average (1915-1924). Were the death rate calculated on the deaths of infants born and registered in Bombay in proportion to the registered births the rate would be reduced to 228. The principal causes of infant mortality were—infantile debility and malformation including premature birth (3,129), diseases of the respiratory system (2,178), convulsions

(827), diarrhoea and enteritis (480), small-pox (105), ague and remittent fever and fever not defined (103), measles (45), dysentery (34) and malarial fever (23). 22 per cent. of infant deaths took place in the first week of life and 13 per cent. during 1-4 weeks—or 35 per cent. did not complete the first month of life. The ten municipal nurses employed during the year paid 45,452 visits, inquired into 3,695 cases of ordinary sickness and reported 288 cases of infectious diseases and 596 deaths in the female population. They attended 1,455 confinements and verified 5,426 births. 14.6 per cent. confinements were attended by municipal nurses; 8.8 per cent. by qualified nurses (other than municipal); and 44.1 per cent. by unskilled women. Relief to poor women during confinement in the shape of necessities and comforts (milk, bread, bed, blankets, charpoys and linen) was continued. The three maternity homes admitted 1,676 cases (1,795 in 1924) and 1,535 cases were confined. The two infant milk depôts distributed 28,712 seers of milk free or at a nominal price. The nine voluntary welfare centres under the Infant Welfare Society issued free 38,889 seers of milk, 20,811 seers at 1 anna a seer and 48,569 seers at 2 annas a seer. The new admissions at these centres numbered 4,024 while 306,221 attended for milk, treatment or advice. The midwives of the Infant Welfare Society attended 736 confinements. There is also a crèche which can accommodate 43 children.

Ahmedabad (1925-26).—11,848 births and 10,541 deaths were recorded, i.e., 43.75 and 38.92 per mille. The infant mortality was 350.75 per 1,000 of births against 365.99 in 1924-25—5 children are said to have died for every 14 births. The high infantile mortality during the year was ascribed to measles, and sudden and severe changes in climatic conditions. The municipality employed 10 midwives who attended labour cases free of charge. They conducted 1,033 deliveries, among which were 40 abortions, 10 miscarriages and 33 still-births. 7 crèches were being run privately in mill compounds. Municipal maternity homes are regarded as a necessity.

Karachi (1925-26).—9,295 births and 5,597 deaths were recorded—ratios 46.09 and 27.75 respectively. The infantile mortality per 1,000 live births was 230 during 1925-26 against 229 in 1924-25, 227 in 1923-24 and 302 in 1921-22. The Louise Lawrence Institute continued to train midwives. The municipality contributed Rs. 5,000 annually to carry on propaganda work by the Health Association and to conduct labour cases in the houses of the poor, free of charge. One of the two maternity homes had to be closed owing to public indifference; but it will be reopened in another part of the city.

Punjab.—Lahore (1925-26).—9,630 births were recorded giving a rate of 37.3 per mille. The birth rate calculated on the basis of the female population of child bearing age, i.e., 15 to 45 years, was 221.3 per mille as against 204.7 per mille in 1924-25. 8,234 deaths were registered—ratio per mille being 32.002 against 37.5 in 1924-25 and 42.7 in 1923-24. Death rate per mille was highest among children under 5 years, viz., 134.03. The infantile mortality rate recorded was 222.1 per 1,000 births as compared with 213.9 in 1924-25—238.1 in 1923-24 and 218.1 in 1922-23. The trained staff of municipal dais attended 1,627 cases. The work of the infant welfare centre was said to be confined to the following:—(a) house to house visits, (b) baby clinics, (c) ante-natal visits to the centre, (d) supervision of dais confinement cases and (e) the training of dais. A baby show was held during the health week.

Amritsar.—8,090 births were recorded, the ratio per mille being 48·3 as compared with 50·4 in 1924. The birth rate was highest in October (65·1) and lowest in May (34·8). The death rate was 39·9 (42·7 in 1924). The infant mortality rate was 133·3 (152·8 in 1924). A dais school was opened and is doing useful work. A health exhibition was inaugurated.

Simla.—The crude infant mortality rate was 211 per 1,000 live births—261 in 1924, 240 in 1923, 310 in 1922 and 424 in 1920. The reduced rate during 1925 as compared with 1920 was ascribed to the work of the Maternity and Infant Welfare Organisation. As in previous years, the highest infant mortality rate was returned by Hindus. The welfare work made three most important advances during the year:—(a) the transference of the centre to a superior building, (b) the completion of the Lady Reading lecture hall which is fully utilised for propaganda work and (c) the employment of a highly trained lady health visitor. A sub-assistant surgeon has been appointed as a whole time school medical inspector and 2,270 boys were examined.

Rawalpindi.—2,241 births (ratio 40·56) and 1,717 deaths (ratio 31·07) were registered. Death rate was again lower amongst Mohamedans. The infant mortality rate was 217·3 per 1,000 births as compared with 240·8 per 1,000 in 1923 and 236·5 in 1924—a steady decrease. The municipal committee is said to have tried to discourage the attendance of untrained dais at confinements. 33 dais were under training for examination. The lady health visitor visited 878 babies.

Jullundur.—The birth and death rates per mille amounted to 47·44 and 27·35, respectively. Of the 538 deaths under one year, 156 occurred under one week. A health week was held in March 1925.

Ludhiana.—2,309 births (46·18 per mille) and 1,579 deaths (31·54 per mille) were recorded. An infant mortality rate of 196·1 was registered as compared with 202·8 and 309 in 1924 and 1923, respectively. Dais are trained. A new maternity block was erected.

Delhi Province.—Delhi Municipality.—The birth rate per mille was 46·35 (48·95 in 1924); 96 still-births were recorded. The infant mortality increased slightly to 182·56 from 174·02 in 1924; it was highest in April (354·62); Hindus returned a higher rate of 212·28 per 1,000 births. The death rate was 29·37 per mille. The two Indian lady health visitors attended 182 midwifery cases; and they and the infant welfare staffs paid 10,585 visits. A dais class was held and 59 were on the rolls. The three infant welfare centres were attended by 62,078 and revisited by 60,643. Admissions numbered 1,465.

Fevers.

14. In British India 3,636,264 or more than half the total deaths from all causes were ascribed to fevers against 4,007,662 in 1924, the ratio per 1,000 being 15·06 in 1925 against 16·60 in 1924. The attempt formerly made to differentiate this fever group has been continued. The accompanying table gives the figures, which are interesting though as yet they are not of much general practical unity.

Province.	Enteric fever.	Malaria.	Relapsing fever.	Kala Azar.	Measles.	Other fevers.
Bengal Presidency . { R. . { U. .	6,732 (·2) 1,020 (·3)	490,800 (11·3) 6,673 (2·1)	3,030 (·1) 131 (·04)	14,715 (·3) 2,051 (·7)	978 (·02) 168 (·1)	337,812 (7·8) 10,118 (3·3)
Assam (for 11 larger towns) .	19	314	2	250	3	309
United Provinces . { R. . { U. .	8,683 (·20) 1,630 (·54)	745,136 (17·59) 20,663 (6·86)	284 (·01) 55 (·02)	82 (·00) 13 (·00)	16,307 (·38) 2,833 (·94)	55,933 (1·32) 23,975 (7·96)
Bombay Presidency . { R. . { U. .	1,757 (·11) 548 (·15)	44,927 (2·91) 3,578 (·95)	1 (·00) 3 (·00)	... 1 (·00)	2,463 (·16) 1,609 (·43)	111,672 (7·24) 17,013 (4·54)
Barma U. .	281 (·23)	2,320 (1·89)	...	...	131 (·11)	1,937 (1·58)
Coorg { R. . { U. .	... 1 (·11)	2,453 (15·83) 29 (3·25)	... ...	... ...	3 (·02) 12 (1·36)	1,564 (10·90) 69 (7·80)

R. = Rural areas.
U. = Urban areas.
Note.—Figures in brackets represent death rates.

Malaria.

15. It is again necessary to repeat the observations of previous years regarding the true malarial death rate. From various verification data a correction factor has been evolved for fever mortality which approximately places about one-third of the deaths returned under "fever" as being due to true malaria. This figure must needs vary in different provinces under different epidemiological conditions when variations in excess or defect might be very considerable. Directors of Public Health of the United Provinces and of Bihar and Orissa consider the error is much greater and are of opinion that malaria is not an important cause of mortality in their provinces. As a working rule, however, one-third to one-fifth may be taken as a fairly true average.

The following table gives the number of cases treated at the hospitals and dispensaries in British provinces during the year 1925. With the exception of Bengal and Madras Presidencies, all the provinces showed decreases though the total number of cases treated increased as compared with the previous year. The year was not an exceptionally bad one for malaria.

Malaria cases treated.

Province.		STATE—PUBLIC, LOCAL FUND AND PRIVATE- AIDED DIS- PENSARIES.		STATE—SPECIAL AND RAILWAY DISPENSARIES.		Private non- aided Dispensaries.	Total.	
		Indoor.	Outdoor.	Indoor.	Outdoor.			
Bengal	{ 1924	6,738	1,385,414	7,195	144,150	325,345	1,868,842	1924
	{ 1925	7,336	1,729,904	9,070	159,125	413,357	2,318,792	1925
Punjab	{ 1924	7,692	1,047,349	4,101	240,190	16,332	1,315,664	1924
	{ 1925	8,279	989,555	3,815	221,997	13,042	1,236,688	1925
Madras	{ 1924	10,680	591,470	862	22,755	32,502	658,269	1924
	{ 1925	11,728	741,984	1,293	27,394	28,216	810,615	1925
Assam	{ 1924	2,360	296,081	2,171	25,312	6,463	332,387	1924
	{ 1925	2,235	233,906	1,822	21,873	8,181	268,017	1925
Bihar and Orissa	{ 1924	3,527	914,285	2,429	77,339	141,425	1,139,005	1924
	{ 1925	3,426	862,715	2,279	83,937	120,010	1,072,367	1925
Central Provinces	{ 1924	2,446	236,367	936	41,813	39,372	320,534	1924
	{ 1925	2,470	222,453	936	40,428	38,549	304,838	1925
United Provinces	{ 1924	6,176	1,083,798	9,448	112,053	106,567	1,318,042	1924
	{ 1925	6,217	888,044	6,128	96,093	101,078	1,097,560	1925
Bombay	{ 1924	8,993	527,969	4,931	88,669	233,860	863,842	1924
	{ 1925	8,945	532,202	4,850	93,737	162,218	801,952	1925
North-West Frontier Province.	{ 1924	1,697	184,369	6,282	53,848	5,906	252,102	1924
	{ 1925	1,525	181,920	4,204	49,104	9,609	246,361	1925
Burma	{ 1924	14,040	225,459	5,452	32,092	Nil	277,043	1924
	{ 1925	13,486	221,417	3,982	26,588	Nil	265,473	1925
Total	{ 1924	63,749	6,492,581	43,807	838,221	907,772	8,348,130	1924
	{ 1925	65,647	6,604,102	38,379	820,276	894,260	8,422,664	1925

Punjab.—Rainfall conditions were not favourable to a heavy incidence. September and October were, as usual, the worst months. Director of Public Health adduces the work done in Gurgaon by the Deputy Commissioner to support his argument that malaria "*per se*" does not

destroy 'Empires' and speculates as to what can be done with Karnal district. Karnal and Rohtak districts had the highest incidence, Sangla, Campbellpur and Lyallpur were amongst those with the lowest.

United Provinces.—Here May—a known non-malarious month—showed the highest fever incidence; but no satisfactory explanation of this is recorded. Bulandshahr, Moradabad and Meerut districts showed the highest fever death rates and Gonda, Fatehpur and Dehra Dun the lowest.

Bihar and Orissa.—Director of Public Health recognises due autumnal and spring malarial rises but does not consider malaria "*per se*" is ordinarily a cause of much mortality.

Bengal.—Fever death rate was highest in December and lowest in July though the seasonal incidence was probably highest in October and lowest about June. Director of Public Health devotes much attention to its analysis by divisions and districts and towns and rural areas. For details of this the provincial report must be consulted. It must be remembered that the problem is here complicated with that of kala-azar.

Assam recorded a decrease fever death rate; but it is significant that Goalpara district, which recorded the highest, has much kala-azar, whilst Lakhimpur which recorded the lowest is least affected with kala-azar.

Madras.—The fever death rate remained a remarkably constant figure (7.7 to 7.9 per mille); but Director of Public Health remarks on the steady increase of malaria in Madras city and advocates the resumption without delay of anti-malarial work. He also thinks that malaria is probably the correct cause of death in a very large proportion of "fevers" deaths.

Bombay.—Sind recorded the highest rates, Sukkur being the worst district, followed by Nawabshah, Larkana, Upper Sind Frontier, Thar and Parkar, Hyderabad. This is an area liable to flooding.

Central Provinces—recorded no severe outbreaks except in Chhindwara and Betul where it is always bad.

Anti-Malarial Campaigns.

16. *United Provinces.*—The activities of the Malaria Branch were chiefly concentrated in the Sarda canal area, more especially round Banbassa where are situated the headquarters of the canal work and where classes were held for municipal, district, assistant district medical officers of health. The usual anti-malarial measures were carried out here and the health of the labourers till the end of the first half of the year when the work was closed was remarkably good; the work opened again in October. As this is a very large engineering project in hyper-endemic area, the remarks of the Director of Public Health regarding malarial control are reproduced:—

"So far no permanent drains have been installed and the kachcha drains dug and deepened during the working season and which function efficiently until the onset of the rains, silt up, become overgrown with grass and weeds and no longer act as drains after the monsoon. Every year, therefore, in October, silt has to be removed, the drains have to be deepened, fresh banks have to be made, grass has to be cleared and in some cases the drains have to be realigned altogether. A very complete system of drainage has now been planned and it is hoped that by the end of this working season, i.e., by June, 1926, this work will be completed. This will solve half the difficulties at Banbassa and it is hoped that these drains

will be of permanent utility in preventing mosquito-breeding within, roughly half a mile of the area which will be in permanent occupation after the completion of Headworks.

"As the construction works progress fresh malarial problems are continually arising. This season, for instance, one of the main problems has an accumulation of water in the bed of the main canal at its head end. The canal banks have been completed here and the natural line of drainage beyond the left bank of the canal has been cut off. This collection of water, which was overgrown with grass and weeds and in which mosquitoes were breeding profusely, was very near the main labour camp and therefore required immediate attention. The grass was cut down to its root so as to thoroughly expose the water to the drying influence of sun and wind, and this resulted in considerable drying up where the water was not too deep. Eventually, however, a small cunette had to be dug and an opening made in the pakka syphon in the bed of the main canal, into which the water was conducted through the cunette."

"Quinine prophylaxis was carried out on the lines adopted in previous years, i.e., on two successive days twice a week. The effect of this measure was remarkably good and there were fewer cases of malaria in the month of October and early in November than in previous years. From the middle of November and until the first week of December, however, there was a marked rise in the incidence of this disease. This rise coincided with a slackness on the part of the contractors to parade their men for quinine, but was partly due to large gangs of labourers coming in after October 15, and larger gangs from November 1; a large proportion of these were found to be infected with malaria, thus increasing the morbidity rate."

"Owing to the early cessation of the rains in 1925 malaria was very prevalent throughout the United Provinces in October and November, more especially in the Terai and forest areas, and there is reason to believe that in some forest enterprises work ceased altogether early in November owing to severe malaria."

A malarial survey of the Hardwar-Union was carried out. The towns of Kosi, Moradabad and Bareilly were visited with a view to eliminating mosquito-breeding grounds able to be dealt with from the balance of funds still accruing from the Government of India 1912-13 grants for anti-malarial works in certain United Provinces towns. Rupees one lakh was voted by the Council for anti-malarial schemes during 1926-27 and certain rural areas were selected for anti-malarial operations. The district and municipal medical officers of health who have been trained in malariology and in modern anti-malarial measures are now in a position to initiate intelligently small anti-malarial schemes in their districts or towns.

Burma.—Malarial surveys of Bhamo town, Thayetmyo town and the public works department camp at Nyaunggyat were conducted. Anti-malarial operations in Kyaukypu town were continued. Costly anti-malarial measures for Akyab town were under the consideration of Government. Jungle clearing and other minor anti-malarial measures were carried out at a number of places.

Madras Presidency.—In certain areas of Kurnool and Chittoor districts, minor anti-malarial measures such as trimming of streams and channels and the clearing of jungles were undertaken with apparently good results. The work done in Ennor and Tiruvottiyur was desultory. Complete malaria surveys were carried out in connection with the Mettur project and a carefully planned anti-malarial campaign was sanctioned.

Assam.—Anti-malarial measures were continued at Pasighat, Lumding and Haflong and undertaken for the first time at Kohima. The Doom-Domma Tea Company in the Lakhimpur district carried out much anti-malarial work in their gardens with good results.

Bengal Presidency.—Bengal Public Health Department carried out a malaria and mosquito survey of various tea gardens in the Jalpaiguri Duars, a report of which has now been published and is very inform-

ative. In these areas malaria is hyper-endemic and conditions are extremely favourable for *culicifacies* and *listoni*. At Meenglas, one of the many estates the following measures were adopted in regard to streams.—(a) underground drainage; (b) periodic flushing; (c) kerosenisation by drip cans and oil sprayers; (d) better draining by deepening, straightening, weeding and by diligent patrolling. Village drainage and tank clearing also received attention; and in this connection grants-in-aid were made to the Central Anti-malarial Society and to the Bengal Health Association to enable them to increase the number of village anti-malarial societies and treatment centres. The formation of these village societies is a step in the right direction as it is only thus that the help of the people themselves, which is an essential for combating this disease, can be adequately enlisted.

Coorg.—In Mercara and Virajpet, attention was paid to cleaning out the drains, tanks and wells in mosquito breeding areas—especially some of the old silted wells—and to filling up stagnant pools. Quinine was distributed as a prophylactic measure. Malaria is very widespread and seems to be increasing. It will require careful investigation at an early date.

Punjab.—The Epidemiological Bureau, under the supervision of the Assistant Director of Public Health conducted surveys of Fatehjang and Shahdara and a general investigation of malarial conditions in the province. The provincial spleen index survey was continued. Annual forecasts were again made in early autumn; these are a feature of recent work in Italy and would seem to be framed on sound premises. It is therefore not understood why they should be regarded provincially as confidential or prohibited as was suggested by some ill-informed press criticism.

Bombay Presidency.—24 subordinate medical officers were placed on special duty and distribution of quinine was continued. It is stated that more specialised work, such as malaria and other surveys, can only be undertaken, when the numbers of the personnel have been increased and its quality improved.

Central Provinces.—The operations undertaken in this province were generally of the simplest and connected with drain and tank cleaning and oiling, canalisation of streams, elimination of pools and disused wells. Pachmari, Nagpur Civil Station, Khandwa and Burhanpur are mentioned as having benefited.

Quinine.

17. In reiterating some of my remarks in last year's report I would specially call attention to the high price of this commodity which is militating against its free use throughout the country. It is difficult to make an accurate estimate of the exact consumption of quinine as considerable quantities must remain in stock. The following facts are only of interest in so far as they show how little value can at present be attached to any results, prophylactic or other, from this drug when we consider the numbers at risk, the corrected malaria mortality and the probable morbidity rates.

Bengal Presidency.—10,109·7 lbs. of quinine were issued in the Presidency during the year (8,479·2 lbs. in 1924). Dacca and Presidency

divisions took the largest amount, viz., 3,096 and 2,433 lbs., respectively.

Bombay Presidency.—Government sanctioned Rs. 50,000 to allow of free distribution and Rs. 65,000 for sale of quinine at post offices. Quinine worth Rs. 15,600 was distributed among school children in Sind, and about 250 lbs. of quinine in powder among the villagers. Out of the grant of Rs. 65,000, Rs. 48,834 were spent in purchasing quinine powder for sale purposes. No government grant for the cheap sale of quinine treatments (hydrochloride) was sanctioned.

Bihar and Orissa.—726·4 pounds of quinine sulphate (671·2 in 1924) were sold. During the fever season quinine was supplied free to certain schools. Out of 5,689 students in these schools, 2,940 took quinine regularly and 88,885 tablets of 4 grains each were consumed with satisfactory results. 1,090 lbs. of cinchona febrifuge were also obtained and distributed free in areas where epidemic malaria was prevalent.

United Provinces.—Quinine to the value of Rs. 13,466 was issued by the Aligarh jail factory for sale through the post offices, vaccinators, etc. Quinine worth Rs. 11,435 was issued for sale through post offices. 100 lbs. were supplied to travelling dispensaries and about 52 lbs. to the Forest, Irrigation and Public Works Departments, local bodies and to the United Provinces Flood Relief Committee, Allahabad. Civil Surgeons were supplied with 180 lbs. to replenish their reserve stocks. About 50 lbs. of this drug and cinchona febrifuge were distributed by the Jail Department to the prisoners and staff.

Central Provinces.—The receipts from the sale of quinine to the general public amounted to Rs. 27,913 (Rs. 27,758 in 1924). 2,001,040 tablets of 5 grains, 38,160 tablets of 2 grains and 16,000 tablets of 10 grains were indented for from the central jail, Nagpur. Quininisation of school children was continued in Balaghat and Drug districts and was commenced in Seoni district. It is stated that owing to the high price of the drug its extensive use by the poorer classes is prohibited.

Punjab.—Local bodies are said to have distributed a “large quantity” of quinine free of cost.

Burma.—The manufacture and sale of cinchona febrifuge tablets were transferred to the Prison Department. Four-grain tablets were manufactured. The outturn was 1,472,363 while a balance of 1,169,937 tablets was in hand. Treasuries absorbed 2,392,400 tablets and sold 3,622,700. 1,179,477 grains of pure quinine, mixed quinine and cinchona febrifuge tablets were issued to Deputy Commissioners for free distribution. 732,400 grains were distributed during the year in 12 districts.

Relapsing Fever.

18. The periodical variations of this disease are well known and it would appear that, in 1925, India was passing through one of its inactive phases, as the disease was nowhere recorded as epidemic.

North-West Frontier Province.—6 cases and 1 death were reported, three being diagnosed in the provincial laboratory.

Bombay Presidency.—4 deaths were recorded (24 in 1924) but the Director of Public Health thought that the disease was more widely distributed than these figures would suggest.

Punjab.—A mild form of the disease prevailed in Sheikhpura, Multan, Muzaffargarh and Dera Ghazi Khan districts. 922 cases and 196 deaths were recorded in the province—24,471 cases and 2,258 deaths in 1924. This swing of the pendulum is quite in keeping with what we know of the epidemiology of this disease in India. The case mortality was 21 per cent. as against 9 per cent. in the previous year. Muzaffargarh district had 534 cases and 120 deaths, and Dera Ghazi Khan district 348 cases and 50 deaths. Novo-arsenobillon and neo-salvarsan were usually in use.

United Provinces.—Though 339 deaths were recorded, the disease was not reported to be in epidemic form in any district.

Madras Presidency.—The disease was confined to five districts, viz., Coimbatore, the Nilgiris, South Arcot, Trichinopoly and Kurnool. The Nilgiris district which registered 200 deaths had 697 cases treated intravenously by salvarsan with a mortality of less than 1 per cent. Other districts recorded 39 deaths.

Central Provinces.—No outbreak was known to have occurred anywhere.

Bengal Presidency.—Though registration of relapsing fever was defective and unreliable, it was said to be responsible for '36 per cent. of the total fever mortality and to have caused 3,161 deaths ('07 per mille) as compared with 4,034 deaths ('09 per mille) in 1924.

Kala-Azar.

19. In view of the advances being made in diagnosis, treatment and the solving of the problem of transmission, this disease may be regarded as being now within measurable distance of control if not of eradication—the ocular demonstration of a provincial campaign of free treatment on the most modern lines, what Assam is furnishing, will soon bear fruit; but we must guard against any premature relaxation of the campaign till the disease is recognised as thoroughly under control.

United Provinces.—95 deaths (104 in 1924) were recorded. The disease is obviously more prevalent here than we formerly believed.

Assam.—6,365 deaths (5,585 in 1924, 4,131 in 1923 and 2,292 in 1922) occurred; while the cases treated rose to 60,940 (48,770 in 1924, 35,071 in 1923, 19,659 in 1922, 15,880 in 1921 and 7,188 in 1920). The percentage of deaths to total treated was 10·44. The provincial organisation for treatment which is very extensive and efficient remained almost the same as previously. This campaign which is being written up in pamphlet form must meantime be studied in detail in the provincial report. Many surveys of infected areas and villages were undertaken. The Kala-Azar Commission together with the enquiry at the school of Tropical Medicine both of which are largely financed by the Indian Research Fund Association continued their valuable and interesting researches on the transmission problem in Assam and Calcutta and fuller accounts of this will be found in Section V. The methods of diagnosis and treatment received much attention and the cheapening of

the drug "urea stibamine" seemed to be within measurable distance of being attained.

Bombay Presidency.—One death was recorded in Bombay city.

Central Provinces.—2 cases were reported from Raipur; and in this connection the Civil Surgeon of the district points out very pertinently that the risk of its importation into the province through returning labourers from the tea districts in Assam should not be lost sight of. When the transmission problem is solved, this risk can be legislated for.

Bengal Presidency.—16,766 deaths were recorded as against 9,997 in 1924, 4,565 in 1923, 1,531 in 1922 and 1,552 in 1921, the rates per mille being .36, .21, .10, .03 and .03, respectively. Calcutta reported a rate of .76 per mille against .66 in all towns and .34 in rural areas. Difficulty in expert diagnosis in rural areas accounts for their low rate. 121,713 cases were treated in dispensaries and 57,328 by other agencies.

The 2nd All-Bengal Kala-Azar Conference was opened by Lord Lytton at the end of the year and much useful discussion on the best ways and means of tackling this problem took place amongst the large body of general practitioners and others who attended.

Influenza.

20. The disease was not severe.

Bombay Presidency.—The incidence was the mildest since 1918. 192 deaths were registered (578 in 1924), Bombay City being responsible for 94 (117 in 1924). 17 deaths were reported among the coolies of the Shivrajpur mines.

Central Provinces.—The disease prevailed in a mild form in many districts, the number of cases treated being Bhandara 238; Jubbulpore 3,300; Saugor 306; Damoh 309; Seoni 308; Mandla 72; Hoshangabad 86; Raipur 162; Amraoti 122; Yeotmal 492 and Buldana a few cases only.

Bengal Presidency.—Influenza accounted for 1,901 deaths—.04 per mille against 1,676 in 1924—.03 per mille.

Punjab.—85 cases and 4 deaths were recorded, the infection being a localised one. The disease prevailed in a mild form in Rohtak district where 79 of the cases occurred.

Madras Presidency.—Small mild outbreaks were reported from the Nilgiris, from Madanapalle in Chittoor district and from Madras.

United Provinces.—A few mild cases were reported from several districts.

Burma.—97 deaths were recorded in towns.

Assam.—Mild local outbreaks occurred in Sibsagar, Sadiya Frontier Tract, Lushai Hills and Lakhimpur districts. A total of 103 deaths were recorded (169 in 1924).

Enteric Fever.

21. I have in a previous report remarked on the sense of false security which is engendered in this country in regard to the enteric group owing to lack of recognition of these diseases. Experience of the habits of certain sections of the population would lead one to postulate its general prevalence throughout the country. I have no reason to depart

from this and would again call attention to the need for better diagnosis of this group and for material for a better tabular compilation than that which follows. I have continued it as it gives some idea of the incidence of the disease in the provinces as well as in a few towns.

		1925.		1924.	
		Total deaths.	Ratio.	Total deaths.	Ratio.
Bengal Presidency	{ Rural .	6,732	·2	4,428	·1
	{ Urban .	1,020	·3	1,146	·4
Bombay Presidency	{ Rural .	1,757	·11	2,509	·16
	{ Urban .	548	·15	695	·19
Assam	Urban .	19	...	25	...
United Provinces	{ Rural .	8,693	·20	11,809	·28
	{ Urban .	1,630	·54	1,843	·61
Burma	Urban .	281	·23	249	·20
Howrah City		103	·5	226	1·2
Calcutta „		613	·6	557	·5
Bombay „		139	·12	160	·14
Karachi „		21	·10	38	·19
Hyderabad (Sind)		35	·49	62	·85
Poona		70	·53	95	·71
Hathras		90	2·32	169	4·36
Lucknow		202	·93	207	·95
Muttra		104	2·13	103	2·11
Benares		37	·19	206	1·36
Farrukhabad-Cum-Fatehgarh .		146	3·02	273	5·65
Agra		253	1·54	312	1·90
Simla		7	...	...	...
Raipur		41 cases	...	...	...
Moulmein		13	·21	19	·31
Rangoon		45	·13	63	·18
Bassein		17	·40	20	·47
Mandalay		101	·68	78	·52

The table shows the figures recorded; but additional information is added in the following note.

Bombay Presidency.—Bombay city returned 139 deaths (160 in 1924); the Southern Registration districts 1,100 deaths; Sind 637; Central 406; Guzerat 17 and Western districts 6.

Punjab.—49 cases with 7 deaths, case mortality being 14·3 per cent., were reported from Simla town. Here are laboratory facilities for diagnosis and a considerable number of excellent practitioners.

Central Provinces.—59 cases of enteric fever were treated in Jubbulpore, and 41 cases in Raipur.

United Provinces.—The large decrease (3,339) over that of 1924 is not explained.

Madras Presidency.—In South Kanara 621 deaths were registered. A personal investigation made in Mangalore, showed that the enteric fevers group was responsible for a very large proportion of deaths in that town.

Bengal Presidency.—The deaths from enteric fever rose from 5,574 in 1924 (·12 per mille) to 7,752 in 1925 (·17 per mille). The Director of Public Health thinks that considering the widespread nature of infection this rate of mortality is too low. Of the 116 towns in the Presidency only 47 recorded deaths from this cause.

Typhus Fever.

22. This is essentially a disease of the submontane and montane tracts especially in the North-West Frontier Province. In this connection I would call attention to my remarks in the annual report for 1924 (paragraph 22, Volume I).

North-West Frontier Province.—16 cases with 10 deaths were reported from Kohat district.

Burma.—Maymyo town reported one death.

Punjab.—The Public Health Epidemiological Bureau carried out field investigations on a reported outbreak of typhus fever at Kotgarh in the Simla Hills.

Beri-Beri.

23. *Bengal Presidency.*—Epidemic dropsy (beri-beri) was reported in Khulna district but it died out quickly. 87 cases with 8 deaths from this cause were reported from Bakarganj district. Affected houses were disinfected and the consumption of suspected articles of diet was stopped with the result that the outbreak subsided. Faridpur district recorded a few cases of beri-beri with 3 deaths.

Burma.—A preliminary investigation on beri-beri financed by the Indian Research Fund Association was commenced under the collaboration of the Director, King Edward Pasteur Institute, Rangoon. It was arranged to carry out—

- (a) an investigation of existing records, reports and statistics in relation to its distribution and incidence,
- (b) an examination of population figures, race and class distribution and their relation to the facts brought out by (a),

- (c) an investigation into the normal dietaries of each class in the larger towns and villages,
- (d) observations on milling of rice, qualities of rice produced, and the type used by each class in different areas,
- (e) an enquiry into special outbreaks of beri-beri during the year.

Central Provinces.—3 cases were reported—1 from Raipur and 2 from Bilaspur.

Madras Presidency.—Beri-beri is known to be prevalent along the north-east coastal area of the Presidency and is said to be more common among the well-to-do and where rice milling is one of the staple trades. Epidemic dropsy was also reported in Ganjam district during rainy season.

It was expected that this disease would, from the research point of view, receive attention from the nutritional and Deficiency Diseases Inquiry under the Indian Research Fund Association once it got into its stride after its revival.

Respiratory Diseases

24. This group must include a great variety of diseases besides influenza, pneumonia, phthisis pulmonalis, and bronchitis. General mortality curves for "fevers" and for this group follow each other very closely as is inevitable where fever is a natural concomitant of most respiratory diseases. In plague epidemic areas, many cases of plague must be reported in this group.

Central Provinces and Berar.—The deaths from this cause numbered 31,710 (2.28 per mille) as against 37,136 (2.67 per mille) in 1924. Jubbulpore district continued to return the highest rate, viz., 9.33. It is again ascribed to exposure to cold and rain.

Assam.—There were 5,602 deaths, a rate of .81 per mille.

Burma.—There were 10,580 deaths (.98 per mille). Mandalay district returned the highest rate.

Bombay Presidency.—There were 83,047 deaths (91,103 in 1924), with a rate of 4.33 per mille (4.75 per mille in 1924) and a quinquennial mean of 4.65. Guzerat and the other districts surrounding Bombay (Kolaba, Ratnagiri and Poona) returned the highest rates—congestion in towns in Guzerat and the return of coolies to their homes in rural areas were the causes adduced.

North-West Frontier Province.—1,549 deaths were registered.

Punjab.—There were 54,270 deaths, a rate of 2.65 per mille (2.66 in 1924). The urban and rural rates were 5.72 and 2.30, respectively. The Director of Public Health remarks:—"The actual figures given under this heading are of little value as most respiratory diseases and practically all cases of pulmonary tuberculosis are returned under the heading "fever."

United Provinces.—26,177 deaths (.58 per mille) were registered, the rate being .02 less than in 1924 and .04 less than the quinquennial mean. The urban mortality was 6.50 and the rural one .16.

Madras Presidency.—The number of deaths registered was 74,591 (1.8 per mille) as compared with 64,782 (1.6 per mille) in 1924. As

a result of improvement in registration, mortality figures have progressively increased during the quinquennium ending 1925.

Bengal Presidency.—These diseases accounted for 27,325 deaths (.59 per mille) as compared with 26,649 (.57 per mille) in 1924. Influenza showed a rise of 13.4 per cent. and phthisis of 9.0 per cent. over 1924.

The death rates of some of the cities were as follows—

Towns.	1925.	1924.	1923.
Bombay City	11.57	13.72	13.27
Calcutta „	9.2	9.3	9.3
Madras „	12.5	10.9	9.0
Rangoon	10.22	9.44	8.83
Karachi	8.61	9.67	9.91
Delhi	11.78	12.15	11.66
Howrah	9.1	8.2	6.6
Poona	13.16	16.80	5.54
Surat	12.69	13.12	10.55
Ahmedabad	15.84	15.51	8.42
Agra	12.24	11.64	10.45
Cawnpore	11.0	11.30	12.73
Allahabad	7.26	7.19	8.32
Lucknow	11.95	11.77	11.64
Jubbulpore	13.18	10.54	12.96
Nagpur	3.05	4.81	8.84
Saugor	14.56	15.30	12.78
Burhanpur	5.65	10.75	6.60
Khurai	9.71	10.70	8.06
Lahore	7.44	8.96	6.22
Amritsar	10.63	11.42	9.31
Pathankot	12.51	13.60	3.13
Gujranwala	8.74	10.53	4.83
Peshawar	8.17	10.62	9.55
Thonze	6.67	11.98	11.53

Pneumonia.

25. *United Provinces.*—The deaths numbered 4,993 (.11) as against 5,158 (.11) in 1924.

Bombay Presidency.—18,950 deaths were reported (.99 per mille) against 19,482 (1.02 per mille) in 1924. Sind Registration district recorded 3,996 deaths, Guzerat Registration district 3,655, Central Registration district 1,479, Western Registration district 1,221 and Southern Registration district 149. Bombay city recorded 8,450 deaths (9,717 in 1924). The urban and rural rates were 3.55 and .37 (3.93 and .31 respectively in 1924). The highest urban and rural rates were those of Mirpur Khas (9.37) and Thar and Parkar (3.09), respectively.

Burma.—The urban areas returned 3,163 deaths (2.58). The highest rates were those of Kyaukse (8.68 per mille), Minbu (8.33), Kawkareik (5.77), Rangoon (4.49) and Pegu (4.37).

Bengal Presidency.—There were 11,259 deaths (11,490 in 1924), the rates being .24 and .25, respectively. Pneumonia was responsible for 41.2 per cent. of deaths due to respiratory diseases and .9 per cent. of total mortality.

The death rates per mille of some of the cities were as follows:—

Towns and Cities.	1925.	1924.	1923.
Calcutta	3.5	3.6	3.2
Howrah	4.7	3.8	2.2
Bombay City	7.33	8.46	8.30
Poona	8.31	10.98	8.04
Karachi	5.41	3.59	3.99
Hyderabad (Sind)	6.39	7.25	5.12
Surat	5.65	5.38	3.05
Lucknow	5.86	5.14	5.34
Nainital	5.65	4.90	6.39
Agra	5.57	5.86	4.75
Dehli	1.1	1.19	1.1

Tuberculosis.

26. *General.*—In the annual report for 1924 a general statement of the position in India to date was given in regard to this disease. It is not, therefore, necessary to recapitulate this; but only to record such additional information as has come to hand in the interval and to stress certain aspects of this disease problem.

*Recent enquiry in regard to hospital and sanatorium accommodation for lung tuberculosis cases has elicited the following information from the provinces:—Madras intimates that plans and estimates regarding tuberculosis hospital are under consideration of Government. In Bombay the total hospital accommodation for tubercle cases is 62 beds excluding beds in St. Joseph's Foundling Home and Maratha hospital for which no details are available. Total sanatorium accommodation is for 65 beds excluding accommodation in communal sanatoria at Karla, Panchgani and Vengarla for which information is not available. In Bengal total accommodation for 92 phthisical patients exists in hospitals outside Calcutta, for 24 patients in medical college hospitals in Calcutta, and for 8 patients in Lewes Jubilee sanatorium, Darjeeling. In the Punjab there are 20 beds in tuberculosis ward Mayo hospital, Lahore. There is no tubercular sanatorium in the province. The Dharampur sanatorium (private) has 75 beds. In Bihar and Orissa no special wards exist for cases of tuberculosis; a sanatorium at Itki for 52 patients is under consideration. In the North-West Frontier Province and Assam there is no sanatorium, nor any special accommodation available for tuberculosis patients. In Burma the accommodation available may be taken at average number of patients treated in last 3 years, *viz.*, 1,218. The only sanatorium accommodation available is for 50 beds in Myingyan central jail. In United Provinces the total sanatorium accommodation is 122 and the number of beds available 64. In Central Provinces no special tuberculosis accommodation exists in ordinary hospitals. In the mental hospital, Nagpur, there are 6 beds; in Chhindwara jail 24 beds; and in Pendra Road Mission sanatorium 67 beds.

Let us contrast this provision with that in England and Wales in 1925. If we include sanatoria, consumption, isolation, children, and general hospitals, for both pulmonary and non-pulmonary cases we find a provision of 474 institutions with 21,423 beds. Of these institutions 264 with 7,882 beds were provided by voluntary agency, the remainder being by local authorities. In addition there were 483 special tuberculosis dispensaries of which 428 were provided by local authorities and 55 by voluntary effort. It will be obvious that India has much leeway to make up and that the onus of provision must be shouldered to a large extent provincially and by private effort if the lead of England is to be followed.

We hear so much from correspondents in the press and through responsible propaganda about the ease with which a central Government or a central fund can and should provide a chain of sanatoria throughout the country that it is a refreshing corrective to ponder over the position in a country like England which is tackling the disease effectively—no state could seriously consider the financial provision of sanatorium treatment for all its tuberculosis ineffectives even were such a course desirable; there is, however, a wide field for provincial effort in establishing provincial sanatoria (say one large one in each province) as the centre around which all other provincial tuberculosis activities should revolve and numbers of tuberculosis dispensaries to focus and radiate local activities, in enacting legislation for compulsory notification where possible, and in establishing provincial propaganda centres on a big scale.

The Chief Medical Officer of Health for England and Wales in a recent review of the tuberculosis position ascribes its steady decline since the middle of the 19th century to the progress of sanitary reform and factory legislation, to greater attention to child welfare, to the general advance in social wellbeing and communal health, to the spread of the knowledge of its contagiousness since 1881, to special measures for its prevention and treatment, and to an increased immunity and resistance in the population. Mere buildings or institutions will not and cannot ensure its eradication or steady reduction unless they are accompanied by a radical reform in general health which must include education in all its phases, better housing, a higher standard of environmental sanitation, less overcrowding, better industrial conditions, adequate medical service, appreciation of the value of fresh air in the home and in the school, a school medical service maternal and child welfare, and other measures dealing with diseases predisposing to it. We must link up the work of the practitioner, the school medical officer, the tuberculosis officer, the sanatorium and institutional superintendent and the medical officer of health; the co-ordination of the work of all this chain must be made complete. We in India know the links which are missing or weak and which can only be supplied by money and trained men. Our hopes for the future in India in regard to this disease must be centred on education, propaganda, dispensaries and notifications.

Statistics of Pulmonary Tuberculosis.

An exact estimate of the present incidence of this disease is still largely one of surmise; but the following notes from the various provincial reports give some idea of its prevalence.

Central Provinces.—1,703 patients (770 in 1924) were treated in hospitals and dispensaries. Of these 397 were treated in Akola district. The disease is regarded as more prevalent than these figures indicate. The Pendra Mission sanatorium had 74 admissions during the year. At present no special tuberculosis accommodation exists in ordinary hospitals.

Burma.—2,022 deaths were recorded in urban areas. 1.01 per cent. of students in schools in Burma were found suffering from tuberculosis.

Bombay Presidency.—17,832 deaths were registered—i.e., a death rate of .93 as against 18,469 and .96, respectively, in 1924. The Central Registration district reported the largest number of deaths (5,425), followed by Guzerat (4,503), Western Registration district (3,134), Southern Registration district (2,518) and Sind (1,061). Bombay city recorded 1,191 deaths (1.04 per mille). The urban and rural figures were 1.58 and .77 against 1.69 and .79 respectively, in 1924. Highest urban rates were recorded in Bhiwandi (5.66), Ranabennur (3.88), Ahmedabad (3.80), Athni (3.77), Hyderabad (Sind) (3.71), Poona City (3.36), Chiplun (3.27), Kalyan (3.24), Ilkal (2.87), Surat (2.78), Rander (2.75), and Ratnagiri (2.73); the highest rural rates in Ratnagiri (2.45), Kolaba (2.43), Kaira (1.63), Ahmedabad (1.35), Surat (1.10), Broach (1.04) and Thana (1.04) were recorded. Mortality is said to be highest between 20 and 40 years of age. The labour forces from Kanara, Ratnagiri, Kolaba and Thana offered a favourable pabulum for this disease and this is accentuated by conditions of life and work in Bombay.

In Hyderabad town (Sind), phthisis was made notifiable and the municipality will open a tuberculosis dispensary on the lines of that in Karachi City. The latter dispensary was attended by 23,060 patients, 15,132 of whom were suffering from tuberculosis; 1,097 new patients were admitted; while the lady health visitors visited 549 cases of tuberculosis.

United Provinces.—Phthisis caused 5,442 deaths with a ratio of .12 per mille (5,224 deaths with a ratio of .11 in 1924). A special health officer carried out a verification of deaths in a *Mohalla* in Allahabad City and demonstrated that of 274 deaths verified, 52 (19 per cent.) died from tuberculosis. The most striking points elicited were said to be that tuberculosis was more prevalent among non-vegetarians and poor people and that the incidence among Muhammedan females was five times greater than among males—presumably, he thinks, owing to their social habits. The Director of Public Health thought that a large number of the deaths attributed to malaria were due to tuberculosis and other respiratory diseases.

Madras Presidency.—In South Kanara there were 520 deaths. It was reported that in Guntur deaths from asthma and tuberculosis only were being registered under the head respiratory diseases; other respiratory diseases being included under fevers.

Bengal Presidency.—Phthisis caused 6,079 deaths (.13 per mille) against 5,577 deaths (.12 per mille in 1924). The increase is attributed to better registration. It was responsible for 22.2 per cent. of the total mortality from respiratory diseases and for .5 per cent. of that from all causes.

The following are the death rates per mille returned by some of the cities and towns. So long, however, as tuberculosis is not notifiable in all towns where there is a permanent whole time health staff it will be difficult to furnish any general tabular statement of its incidence which would be of value.

	1925.	1924.	1923.
Bombay City	1.04	1.23	1.05
Calcutta City	2.3	2.2	2.2
Farrukhabad	5.34	4.69	3.97
Lucknow	4.19	4.71	4.52
Allahabad	2.23	2.93	2.54
Nainital	2.75	1.86	3.12
Agra	2.98	2.72	2.80
Benares	2.05	2.15	2.01
Cawnpore	4.32	3.59	3.25
Karachi	2.17	2.25	1.81
Hyderabad (Sind)	3.71	2.41	2.88
Ahmedabad	3.80	3.50	3.56
Surat	2.78	2.87	3.27
Poona	3.36	4.09	3.76
Ba. goon	3.44	2.82	2.59

Dysentery and Diarrhoea.

27. 208,412 deaths (.86 per mille) were recorded against 230,222 deaths (.95 per mille) in the previous year. Such figures, as are available for dysentery and diarrhoea separately, have been tabulated below; but it should be remembered that the border land between many diarrhoeas and mild dysenteries is very narrow, and that, in the absence of laboratory diagnosis, this separation is beset with difficulty.

Province.	Total Dysentery and Diarrhoea 1925.	RATIO PER MILLE.		Total Diarrhoea.	Ratio.	Total Dysen- tery.	Ratio.
		1925.	1924.				
Delhi	8,495	·71	·58	Not available.			
Bengal	21,836	·5	...	8,272	·2	13,564	·3
Bihar and Orissa	25,819	0·7	·7	Not available.			
Assam	9,188	1·34	...	93†	...	325†	...
United Provinces	11,335	·25	·26	5,856	·13	5,479	·12
Punjab	9,475	·46	·58	Not available.			
North-West Frontier Pro- vince.	163	·08	...	Not available.			
Central Provinces* . . .	24,024	1·73	2·35	19,869	1·43	4,155	·30
Madras	78,935	1·9	1·8	Not available.			
Coorg	194	1·18	1·18	68	·42	126	·77
Bombay	20,643	1·08	1·51	17,031	·89	3,612	·19
Burma	6,801	·63	·79	1,378	1·12	1,520	1·24
(For towns only.)							
Ajmer-Merwara	142	·29	·41	Not available.			

* September recorded the highest number of deaths (2,825).

† For a few towns only.

Cholera.

28. *General.*—In last year's report some indication was given of the position which India occupied as a reservoir of cholera infection in relation to the rest of the world. It was further shown that British Indian sanitarians have been engaged upon the problems connected with its epidemiology for over a century, and that, owing to the current researches under the Indian Research Fund Association and under provincial Governments, much new light was being shed upon such problems as still awaited solution. It is with pleasure that I am able to record the initiation of what promises to be valuable work in several provinces; some account of this will be found in Section V. The publicity given to this work has already helped to dispel from the minds of many hygienists in Europe the impression that nothing was being attempted in India in connection with the solution of cholera problems.

World Statistics.

Europe was free of the disease except for a few cases on the Don in Russia. England had no cases. Its incidence in India was much less than usual though adjoining Asiatic countries such as China, Japan and Siam became heavily infected; at the treaty port of Shanghai it was epidemic. Ceylon remained free as did also the Dutch East Indies, while Manila and French Indo-China had a very light incidence; on the other hand the disease became epidemic in Siam and China towards the end of the year and spread from there to Japan.

Statistics in British India.

The general distribution, already referred to, indicated that the cholera situation had changed entirely since that of 1924. Though one is able to record a lower rate of incidence during the last quinquennium than in any of the previous recorded quinquennia, it is with diffidence that one is tempted to draw conclusions from this in such a disease. Its great endemic centres in the Gangetic Plain and in Bengal remained comparatively free from the disease as did also Bombay and the Central Provinces. On the other hand Madras and the Indian State of Kashmir were heavily infected. The severe epidemics in Kashmir and Madras were expected to have their repercussion in the surrounding provinces in 1926. The mortality was less than $\frac{1}{2}$ that of 1924, as 115,645 deaths (·48 per mille) were recorded as compared with 293,707 deaths (1·22 per mille) in 1924.

Bengal Presidency.—There were 34,276 deaths (·7 per mille) as against 41,483 in 1924, a reduction by 32·7 per cent. over that of 1924. 101,735 cholera inoculations were carried out. 18,015 wells and 5,060 tanks were disinfected. Fifty sanitary inspectors were specially deputed for cholera duty while the publicity branch did invaluable propaganda work.

Bombay Presidency.—The Presidency with only 57 deaths was practically free, this is the lowest recorded mortality during the last 50 years. A grant of Rs. 15,000 of which only Rs. 1,000 were spent was sanctioned by Government for measures against outbreaks.

Bihar and Orissa.—The death rate fell from 2·2 per mille in 1924 to ·5 in 1925. Purnea recorded the highest rate (4·0) among rural areas; Katihar (3·6), Forbesganj (3·4) and Buxur (2·6) were the highest among urban areas.

The epidemic cadre of 10 assistant surgeons was maintained and an epidemic reserve of 100 vaccinators was also entertained. Vaccinators and kabirajes were trained in disinfection and in simple preventive measures so that village epidemics might be dealt with locally more promptly. 7,116 c.cs. of cholera vaccine were issued to civil surgeons and others. After careful trials kaolin was introduced as a very suitable treatment for general issue throughout the province.

Punjab.—The province was visited by epidemic cholera of moderate severity, 3,049 deaths (·15 per mille) being recorded. (3,351—·16—in 1924). 23 out of the 29 districts were infected, the order of severity being Shahpur 875 deaths, Jhelum 398, Gurgaon 381, Gujrat 276, Jhang 135, Gurdaspur 115. The highest urban mortality was recorded in Palwal

(95), Pind Dadan Khan (60), Jhelum (54), Hoshiarpur (50), Rawalpindi (36), Bhera (30). The outbreak was definitely traced to a fair at Pirani-Kalyar, 8 miles from Rurki. The infection was imported from Kashmir State where cholera had been rife.

United Provinces.—Deaths numbered 7,653 (.17 per mille) as compared with 67,000 deaths in the previous year (1.48 in 1924 and the quinquennial mean of 1.01). The urban and rural figures were .19 and .17 per mille as compared with .63 and 1.54, respectively, in 1924. In the 20 districts under the cholera scheme 3,680 deaths were recorded as compared with 3,973 in 28 districts outside the scheme. A staff of sanitary inspectors, vaccinators, sweepers, etc., which was entertained for anti-cholera operations in villages in Garhwal District, through which lies one of the great Hindu pilgrim routes, also treated general diseases in addition to cholera.

A grant-in-aid of Rs. 20,000 was sanctioned by the Indian Research Fund Association for cholera research in these provinces on lines similar to those of the investigation by the Mines Board of Health, Asansol.

Central Provinces.—The province with only 124 deaths was practically free. 317 anti-cholera inoculations were performed.

Madras Presidency.—The disease though very prevalent was practically confined to eleven districts in the southern parts of the Presidency, viz., Madura (8,275 deaths), Tanjore (7,261), Ramnad (6,828), Tinnevely (5,621), South Arcot (5,097), Salem (2,869), Coimbatore (2,743), Trichinopoly (1,933), Malabar (1,337), North Arcot (1,284) and Chingleput (878); these districts being responsible for over 98 per cent. of total cholera deaths. The municipalities of Bodinayakanur (16.8), Dharmapuram (8.7), Tinnevely (6.6), Chingleput (5.9) and Palni (5.1) returned the highest death rates. The proportion of deaths among males and females was as 100 to 90. The Director of Public Health remarked—"The outbreaks arising in the deltaic areas of the Presidency are characterised by the chronicity of their character, whereas in non-deltaic regions they are short and explosive." Epidemiological investigations, which were made in 15 districts, showed that the disease was in some instances imported from Hyderabad and Mysore States, as well as from Bihar and Orissa and Bombay Presidency. Apparently since the introduction of the District Health Scheme, outbreaks of the disease in pilgrim or fair centres have been exceptional. The Director wisely lays stress on the importance of supervising the pilgrim routes. A geographical survey of the disease was undertaken. The efficacy of anti-cholera vaccines (both Haffkine's and Besredka's) and the most suitable remedies in the treatment of early cases of cholera were also under critical examination.

Coimbatore and Salem together showed 4,448 inoculated with only 1 death. The chlorination of drinking water supplies was carried out extensively. Delayed notification and failure to report cases of infectious diseases were said to be less frequent.

Burma.—There were, in this comparatively mild epidemic, 1,932 deaths (.18 per mille) as compared with 8,083 (.75) in 1924; rural areas being responsible for 1,696 deaths. 13,965 persons were inoculated.

Assam.—6,233 deaths (.90 per mille) were registered against 19,182 (2.79) in 1924. Nowgong District was worst affected. Epidemic units

consisting of 6 sub-assistants surgeons and 13 disinfection carriers were employed and an attempt was made to inoculate all contacts with vaccine; its effect in arresting the disease was said to be "marvellous." Sources of water-supply were disinfected with bleaching powder and potassium permanganate. 103,930 c.cs. of cholera vaccine were issued.

Plague.

29. *General.*—Plague was less prevalent throughout the world. India, which supplies 90 per cent. of the world's cases, showed a mortality less than half that for 1924. Other Asiatic countries remained much the same as in the previous year. Africa reported 5,200 cases as compared with 6,800 in 1924. The situation in the Mediterranean Area improved considerably. In Egypt fewer cases were reported in 1925 than in any year since 1901. In the Union of South Africa the incidence was much less—70 cases against 400 in 1924. A similar story is received in regard to Western Asia, certain parts of the African littoral, Iraq, Ceylon, Hongkong, Japan, Korea, Palestine, Persia and Turkestan were free; but the disease increased in Java, Siam, Straits, Kenya and Uganda. There was an increased prevalence in European Russia and 28 cases were reported in Greece, 11 in Constantinople, 4 in Marseilles and 2 in Naples. For the fifth year in succession no human case occurred in England or Wales.

The experience of the United States of America is interesting. The United States of America Health News says:—

"There was an outbreak of plague in Los Angeles—California in which there occurred 33 cases of pneumonic plague with 31 deaths, and 8 cases of bubonic plague with 3 deaths. Both rat and squirrel plague were also found to exist. The Public Health Service assumed charge of plague suppressive measures in Los Angeles just before the end of the year. The occurrence of rodent plague in New Orleans La. and Oakland, California and of human and rodent plague in Los Angeles—California made it necessary for a time to put into effect out-going quarantine measures in these cities to prevent the infection from being carried, to other States and to foreign countries."

Statistics in British India.

As has previously been explained, the plague year is reckoned in India from July to June, and, on this basis, the figures for 1924-25 show a drop to nearly one-third of the annual average of the period from 1898 to 1924, and were almost a third of the figures for the previous plague year. The bulk of this mortality occurred in the United Provinces, Punjab and Bombay, the other provinces being very lightly affected—the lowest incidence being in Bengal followed, in order, by Burma and Madras. Epidemiologists naturally remarked on the continued freedom of the coastal districts around the Bay of Bengal, including Assam, a condition of matter which has not yet been satisfactorily explained.

The mortality with 117,717 deaths was about one-third that of 1924, with the ratio being .49 and 1.50 per mille, respectively. The Punjab, United Provinces and Bombay Presidency with rates of 1.83, 1.08 and .66, respectively, exceeded the general death ratio.

Bihar and Orissa.—The mortality, 6,788 deaths (.2 per mille), was the lowest on record since 1905.

United Provinces.—49,091 deaths (1·08 per mille) were recorded as against 56,210 deaths (1·24 per mille) in 1924 and a quinquennial mean of ·89. The urban and the rural rates were ·91 and 1·09 (1·05 and 1·25 in 1924). Hapur (18·74), Khurja (15·40) and Gangoh (14·18) among towns were worst affected.

Punjab.—The epidemic was mild, the number of deaths being 37,630 (1·83 per mille against 12·24 per mille in 1924). It was more severe in urban areas (2·24 and 1·79, respectively). The districts severely infected were Karnal (9,595 deaths), Rohtak (3,132), Gurdaspur (3,034), Ferozepore (1,908), Lahore (1,660), etc. The type was chiefly bubonic; though Hissar, Rohtak, Lahore, Amritsar, Gujrat and Attock reported localised outbreaks of pneumonic plague; septicaemic plague also occurred, though sparingly, in the districts of Rohtak, Amritsar, Sialkot, Gujranwala, Gujrat, Jhelum and Multan. Evacuation, solar disinfection and rat destruction were resorted to. Flea destruction by cresol fumigation was also intensively employed. 304,981 plague inoculations were performed (444,589 in 1924).

North-West Frontier Province.—With the exception of Peshawar district which reported 217 deaths, the province was practically free. 4,032 inoculations were done.

Central Provinces.—5,223 deaths (11,081 in 1924) were recorded, 3,385 of which were in Berar. Evacuation, rat destruction and inoculation were resorted to. 40,069 inoculations were performed (54,305 in 1924). Two deaths were recorded among the inoculated.

Madras Presidency.—There were 2,014 deaths ·1 per mille—the lowest figure ever recorded since this disease first made its appearance in Madras Presidency. Nearly 75 per cent. of the mortality was returned by Salem (898), Coimbatore (392) and Madura districts (207). In Salem no satisfactory preventive measures were attempted. The usual anti-plague measures were vigorously and consistently carried out. Nearly 4,000 persons in the infected areas were protected by inoculation.

Bombay Presidency.—12,601 deaths (9,214 in 1924) were registered, the ratio being ·66 per mille (·48 in 1924). The heaviest mortality was shown by Dharwar, Satara and East Khandesh districts; in Sholapur, Bijapur, Belgaum and Kanara districts it was milder. Inoculation was the sheet anchor and special inoculators were appointed. Routine trapping operations were carried out throughout the year in Belgaum, Nipani, Satara, Sholapur, Malegaon, Dhulia, Karachi, Hyderabad and for shorter periods in many other towns. Systematic evacuation was rarely practised. 60,831 persons were inoculated (60,327 in 1924). Among persons inoculated, 83 cases, 27 of whom were attacked within 10 days of inoculation, occurred with 32 deaths.

Delhi City.—19 cases, most of which were importations, with 12 deaths were reported. The intensive rat destruction work, begun in 1923, was continued during the year; Government gave a grant of Rs. 10,000 towards its cost. The city though surrounded by heavily plague infected districts has for several years remained free from epidemic plague. Despite the well-founded and extensive belief in the value of rat destruction which is now general in Delhi city the more radical proposals for rat-proof storage of grain have not proved acceptable to the municipal committee. It is in my opinion unfortunate that the proposals of the Medical Officer of Health for the erection of rat-free grain godowns and

the cessation of bulk storage of grain in dwellings were shelved by the municipal committee whose resolution of 6th of August 1926 reads as follows:—

“Resolved that as it is not possible at this stage to take effective action in this matter on account of want of a sufficiently large and suitable site for the purposes within the city, the case be postponed until such time the question of extension of the city southward is considered by the Municipal Committee.”

Ordinary meetings amendment dated 25th August 1926.

The case be referred to the Executive and Finance Sub-Committee for consideration.

“Resolved that the question of the provision of rat-proof godowns be dropped as in view of the practical difficulties entailed in carrying out the scheme, the results achieved will not be commensurate with the expenditure involved.”

Rat plague rat extermination and rat fleas.

30. Both provincial medical authorities and local bodies have been alive to the need for endeavouring to instituting measures against rats where plague was endemic or severe; but in this matter I would again urge thoroughness and continuity of effort without which results are likely to be disappointing.

Punjab.—A systematic anti-rat campaign by means of baiting, trapping and smoking by Lane's Nim Battis was carried out in almost all the infected districts and was continued intensively from July till November. In this way over 870,000 rats were destroyed. In Lahore town 227,889 rats were destroyed by trapping and 67,365 by baiting. 47,389 rats were caught and destroyed in Rawalpindi town, 127,970 in Sialkot, 81,130 in Amritsar and 26,120 in Multan.

Delhi Province.—In Delhi city 302,529 rats were trapped and destroyed; 32,302 rats were examined for detection of plague infection and none of them was found infected. The Health Officer states that “the intensive rat destruction work protected the city from epidemic plague during the last two years at a cost of 2 annas 3 pies per head of the population.”

Bombay Presidency.—In Bombay city 642,405 rats were collected and destroyed. Of these 315,185 rats were examined and 2,319 were found infected, giving a ratio of .74 infected rats per 100 rats examined. The following table gives the details:—

City of Bombay.					Rats examined.	Found infected.	Ratio per cent.	Human deaths.
January	1925	.	.	.	30,652	93	.30	2
February	"	.	.	.	27,192	274	1.00	8
March	"	.	.	.	25,140	477	1.89	38
April	"	.	.	.	24,417	441	1.80	48
May	"	.	.	.	26,100	360	1.37	39
June	"	.	.	.	22,106	177	.80	19
July	"	.	.	.	26,122	112	.42	7
August	"	.	.	.	22,203	102	.45	9
September	"	.	.	.	29,322	86	.29	2
October	"	.	.	.	28,201	82	.29	1
November	"	.	.	.	25,427	53	.28	...
December	"	.	.	.	28,308	62	.21	1
TOTAL					315,185	2,319	.74	174

In Karachi City 69,608 rats were trapped.

Central Provinces.—In Nagpur town where 76,074 rats were destroyed, a rat destruction scheme has been pursued during the last 8 years with an absence of any large outbreak of plague. In Jubbulpore town 30,324 rats were destroyed, in Seoni 255, in Amraoti 19,795, in Amraoti Camp 11,024 and in Malkapur 21,891. Rat killing was also started in many other towns during the year, *viz.*, in Shegaon 11,884 rats were destroyed, in Burhanpur 22,128, in Hoshangabad 8,028. Nagpur city municipality introduced a special rat week as in Europe, when intensive propaganda work was done.

Burma.—641,283 rats were destroyed (687,703 in 1924)—Rangoon Corporation accounted for 604,250 of these, Bassein town for 9,150; Pyapon for 5,388, Kyaikto for 4,807, Syriam for 3,704 and Kyaiklat for 3,539.

Yellow Fever.

31. Yellow fever though unknown in India has a certain interest for this country in view of the opening to traffic of the Panama Canal—a former endemic area—and of the invasion of the West Coast of Africa. No case or suspicious case was reported in India during 1925, and the only cases reported throughout the world were from the West Coast of Africa where 20 cases involving Nigeria, Gold Coast, Senegal, Ivory Coast and Algeria were recorded.

The Health News issued by the United States Public Health Service, No. B-47 says:—

“For almost the first time in the history of the United States Quarantine service, there was no detention of ships, passengers or crews on account of yellow Fever. A few cases of this disease were reported from El Salvador, Central America, from three countries in South America, and also from the Gold Coast and Nigeria in Africa. The fact that the incidence of Yellow Fever has at no time in its recorded history become so low is very gratifying. Surgeon General Cumming points out, however, that until it is completely eradicated from the earth, yellow fever will remain a grave potential danger.”

Small-pox.

32. *General.*—Throughout 1925 the world incidence was low; but European Russia, Portugal and Spain recorded a considerable incidence, though the disease in Russia seems to be steadily declining. All the Asiatic countries with the exception of British India recorded low incidences, while the disease appeared in an epidemic form at Rio Janeiro, in South America and at various places in Africa. There was a marked decrease in North America. The European variety remained comparatively mild except in Spain and Russia. In the north of England the disease continued to spread in a mild form causing however, considerable local disorganisation which was quite preventible. In British India there was a slight diminution over 1924, the incidence being greatest in spring. Bengal and Bihar and Orissa were worst affected, Madras and Bombay following.

Statistics in British India.

The total deaths from this cause were 85,986 against 55,380 in 1924. The Presidencies of Madras and Bombay reported 26,122 deaths (Madras

20,478, Bombay 5,644), Bengal 17,436, Bihar and Orissa 14,382, United Provinces 9,373, Punjab 7,038, Burma 3,852 and Central Provinces 3,145.

Madras Presidency.—Death rate was highest in Madras (1·5) and Godavari East (1·4). More than half of the mortality was registered in seven districts, *viz.*, South Arcot, Godavari East, Salem, North Arcot, Guntur, Godavari West and Anantapur.

7,654 (37·4 per cent.) of the total small-pox deaths were in age-group “under one year”; and 7,487 (36·5 per cent.) between 1 and 10 years, *i.e.*, about 75 per cent. of the deaths occurred among children under 10 years of age—surely a strong argument for a much more vigorous vaccination policy for the protection of children.

Assam.—Small-pox in severe epidemic form prevailed in Sibsagar district, where opposition to vaccination is considerable; the local government found it necessary to impose compulsion in several rural areas as well as in the towns. Small-pox deaths in the province numbered 2,745 with a ratio of 40 per mille.

Bihar and Orissa.—The death rate increased from 2 in 1924 to 4 in 1925—largely on account of a serious epidemic in Orissa (Cuttack and Puri districts). Balasore district was also badly affected. Among urban areas, the disease was severe in Jhalda, Purulia, Sahebganj and Jugsalai which returned death rates of 3·1, 2·7, 1·9 and 1·9, respectively. Facilities were available throughout the province for vaccination by trained vaccinators.

United Provinces.—3,128 out of 9,373 deaths from small-pox occurred among children under one year of age and 4,266 between 1 and 10 years, *i.e.*, nearly 79 per cent. Comment is unnecessary.

Punjab.—A large unprotected and susceptible population was said to exist in the province. The highest death rates were recorded in Jhelum (1·28), Lahore (·72), Shahpur (·65) and Gujrat (·62). Of the total mortality of 7,038 deaths, 1,944 were of infants under one year and 3,760 of children between 1—10 years. Government has agreed to employ female vaccinators with a view to popularising vaccination among women and the experiments will for the present be confined to the towns of Lahore, Amritsar, Sialkot, Ferozepore, Jullundur, Ludhiana, Simla, Rawalpindi and Multan. The average death rate for towns where vaccination Act is in force was 1·08 against 41 in 1924.

Bombay Presidency.—The death rate (·29 per mille) represents a 50 per cent. reduction over that of 1924. Of the 5,644 deaths 1,375 were of infants under one year and 2,646 of children between 1 and 10 years of age. The vaccinal state of 3,279 cases, which was enquired into, showed that 1,789 were among the vaccinated and 1,490 among the unvaccinated. Of the former 49 died—a case mortality of 2·7 per cent., and of the latter 316 died—a case mortality of 21·2 per cent. or ten times as great as among the vaccinated. The average of vaccinated persons attacked was 19, against 8 for the unvaccinated, and the average age of the vaccinated persons fatally attacked was 29, against 9 for the unvaccinated.

Bengal Presidency.—There were 17,436 deaths (5,567 in 1924), the ratios per mille being 4 and 12, respectively. The death rate increased by 279·3 per cent. over that for 1924. 6·2 per cent. of the mortality occurred among infants and 19·08 per cent. in children between 1 and 10 years of age, the remaining 75 per cent. among persons above 10 years, thus demonstrating the necessity for a revaccination campaign.

Small-pox Hospitals.

33. At the instance of the India Office, the provincial Governments were asked by the Government of India to include in their annual reports on public health information as regards (i) the number and situation of small-pox hospitals in the various provinces in India, (ii) the number of patients treated in hospitals annually and their vaccinal condition and (iii) the notification and isolation of small-pox cases in municipal towns. The information thus furnished for the first time is summarised below :—

Delhi Province.—In Delhi city where the Infectious diseases hospital is in a temporary building, the municipality has under consideration the building of a new hospital. It treated 33 cases of small-pox, of which 10 died. The Imperial City area has a small Isolation hospital. There is however no law by which patients can be compulsorily sent for admission.

Bengal Presidency.—No separate permanent small-pox hospitals exist in this Presidency. There is a ward for small-pox cases (164 beds) in the Campbell hospital in Calcutta. There are Infectious diseases hospitals in Howrah and Darjeeling. The former has 8 beds for small-pox patients which can be increased to 12 if necessary; the latter can accommodate 20 small-pox patients in a special ward and also 4 to 6 European cases in a separate block. The immediate contacts are segregated in another building in the same compound. Information regarding the vaccinal condition of small-pox patients in the Campbell hospital, Calcutta only was available :—

(a) Vaccinated as evidenced by the presence of one or more vaccination cicatrices	823
(b) Stated to have been successfully vaccinated, but no vaccination cicatrix present	333
(c) Stated to be unvaccinated (or vaccinated unsuccessfully) and no vaccination cicatrix present	320
(d) Previously unvaccinated but vaccinated during incubation of small-pox	15
(e) Stated to have been successfully re-vaccinated	44
	<hr/> 1,535 <hr/>

Section 435 of the Calcutta municipal Act of 1923 places an obligation on every medical practitioner in Calcutta to notify to the Health Officer of the Calcutta Corporation every case of small-pox of which he becomes cognisant and section 438 of the Act empowers the Health Officer to remove a small-pox patient to a hospital for treatment, if conditions for proper isolation do not exist in the patient's house. At present there is no provision for the compulsory notification of infectious diseases in mufassal municipalities, unless and until the Bengal municipal Bill 1925 is introduced.

Bihar and Orissa.—There are no special small-pox hospitals. Small wards for infectious diseases are attached to some of the larger hospitals, but small-pox cases are seldom treated in them. Notification of such cases and isolation of them (other than that practised in the homes of the patients), does not exist.

Assam.—The municipal towns of Shillong, Gauhati, Dhubri and Tezpur have small-pox isolation hospitals. In Karimgang, Nowgong, Jorhat, Sibsagar and Nazira, there is generally attached to the charitable dispensary an isolation shed in which such cases are segregated; but in the remaining towns there are no arrangements for isolation, patients being treated in their own houses. A provision for compulsory notification of small-pox cases exists in the Assam municipal Act which is however, not in operation in most of the towns. The information available as to the number of patients treated and their vaccinal condition is as follows:—

Municipal towns.	No. of small-pox patients treated.	Vaccinated as evidenced by presence of one or more vaccination cicatrices.	Stated to have been successfully vaccinated but no vaccination cicatrices present.	Stated to have been vaccinated (or vaccinated unsuccessfully) but no vaccination cicatrices present.	Previously unvaccinated but vaccinated during incubation of small-pox.	Stated to have been successfully vaccinated.
Karimganj . . .	1		Not available			
Dhubri . . .	5	1	4	...	...	...
Gauhati . . .	5	4	...	1	...	...
Tezpur . . .	1	1	...	...	...	...
Nowgong . . .	3	1	...	2	...	...
Jorhat . . .	2	2	...	...	...	...
Sibsagar . . .	1	1	...	...	...	...
Nazira . . .	2	2	...	...	...	...
Shillong . . .	2	1	...	1	...	...
	22	13	4	4	...	...

United Provinces.—There are no regular small-pox hospitals. Suitable infectious diseases hospitals exist at Muttra and Ajodhia (Fyzabad district) and one on a smaller scale at Hardwar. Manora (Nainital district) has an infectious diseases hospital. In Agra and Cawnpore there are infectious diseases wards; while in Benares where a temporary building is used for the purpose—the construction of an infectious

diseases hospital is about to commence. The following table given the vaccinal condition of the patients treated :—

Towns.	No. of patients treated in hospital.	VACCINAL CONDITION OF THE PATIENTS TREATED IN HOSPITAL.				
		Vaccinated as evidenced by presence of one or more vaccination cicatrices.	Stated to have been successfully vaccinated but no vaccination cicatrix present.	Un-vaccinated or vaccinated unsuccessfully and no vaccination cicatrix present.	Previously un-vaccinated but vaccinated during incubation of small-pox.	Successfully re-vaccinated.
Muttra City . . .	6	...	1	5	...	...
Nainital (Manora) .	16	1	...	15	...	...
Fyzabad Ajodhya City .	1	...	...	1 Unvaccinated	...	...
Benares City . . .	16	12	...	4 Unvaccinated	...	...
Agra City	17	2	6	9	...	...
Cawnpore City . . .	74	42	...	32	...	...
	180	57	7	66	...	...

It is considered that the segregation of small-pox patients in suitable infectious diseases hospitals must be made compulsory if any advance is to be expected.

Punjab.—The three towns of Simla, Lahore and Amritsar are equipped with infectious diseases hospitals, in which small-pox cases are treated. In other towns isolation huts are occasionally erected as emergency arises and in some cases the isolation ward of a civil hospital (where such exists) is used for the purpose. In Simla only is the principle of the isolation hospital strictly enforced.

North-West Frontier Province.—There are no special small-pox hospitals in the province. The population is generally averse from coming to a hospital and therefore no information has so far been collected.

Central Provinces.—There are no special small-pox hospitals. In Nagpur city there is an isolation hospital with 8 beds of which 4 are for small-pox cases. Jubbulpore has an infectious diseases hospital with 20 beds, while Chanda has a small infectious hut. Raipur has an isolation camp. Infectious wards exist in Chhindwara and Raipur. In some instances temporary arrangements are made as occasion arises. The fol-

Following table gives particulars of the small-pox patients treated in hospitals:—

District.	Vaccinated as evidenced by presence of one or more vaccination cicatrices.	Successfully vaccinated but no vaccination cicatrix present.	Unvaccinated or vaccinated unsuccessfully and no vaccination cicatrix present.	Previously unvaccinated but vaccinated during incubation of small-pox.	Successfully re-vaccinated.
Nagpur	64	2	10	...	...
Jubbulpore * . . . . .	...	...	...	...	...
Saugor † . . . . .	...	...	...	...	...
Raipur . . . . .	...	...	1	...	...
Chhindwara	17	...	10	...	...
Hoshangabad	13	...	9	...	...
Yeotmal	2	16	...	...	...
Buldana	9	...	9	7	...
	105	18	39	7	...

*Five cases were treated but none found vaccinated.

†Twenty-three cases were treated in the hospital and dispensaries.

Madras Presidency.—There are seven institutions for the isolation and treatment of small-pox patients. 1,292 cases were treated. 160 additional patients were accommodated in sheds for general infectious diseases. Of the 1,452 cases the vaccinal condition of 1,411 only is available:—

(a) Vaccinated as evidenced by one or more cicatrices	839
(b) Stated to have been successfully vaccinated but no vaccination cicatrices present	334
(c) Stated to be unvaccinated or unsuccessfully vaccinated but no vaccination cicatrices present	153
(d) Previously unvaccinated but vaccinated during the incubation period of small-pox	8
(e) Stated to have been successfully re-vaccinated	77
	<u>1,411</u>

Owing to sentimental and religious objections an infinitesimal proportion of small-pox cases is isolated.

Burma.—Small-pox cases are for the most part isolated in separate wards of the local contagious diseases hospital or in the isolation wards of the civil hospital. In certain places in the districts temporary isolation huts are erected outside the inhabited area to accommodate such

cases. Notification of small-pox cases in towns under section 135 of the Burma Epidemic Diseases Act. The question of the issue of rules, under the epidemic diseases Act, for the prevention of the spread of small-pox (and cholera) and to secure segregation of small-pox cases is under consideration.

1,638 small-pox cases were treated in contagious diseases hospitals, and isolation wards. Of this number, 1,448 were in the Rangoon Corporation contagious diseases hospital and the remainder in hospitals in 23 other districts. Of these, 987 had marks of vaccination but only 26 had marks of revaccination. 21 showed no marks though it was claimed that vaccination had been successful and 599 were unvaccinated.

Bombay Presidency.—No information was received except that failure to notify the appearance of infection, until small-pox epidemics were well established, occurred in a number of instances.

Information regarding the vaccinal history of patients treated in institutions in accordance with the India Office request is incomplete for 1925; but such figures as are available have been tabulated in a general table. It is hoped that the information furnished will allow of a more complete table being prepared for the next annual report.

Table showing vaccinal state of small-pox cases treated in institutions (from provincial information by request).

Provinces	No. of small-pox patients treated and about whom there is information.	Vaccinated as evidenced by presence of 1 or more vaccination scars.	Stated to have been successfully vaccinated but no vaccination scars present.	Stated to have been vaccinated (or vaccinated unsuccessfully) but no vaccination scars present.	Previously unvaccinated but vaccinated during incubation of small-pox.	Stated to have been successfully re-vaccinated.	REMARKS.
Bengal	1,535	823	333	320	15	44	
Assam	22	13	4	4	...	...
United Provinces	130	57	7	66	...	...
Central Provinces	169	105	18	39	7	...	
Madras	1,411	839	334	153	8	77	
Burma	1,034	987	21	....	...	26	
Total	4,301	2,824	717	582	30	147	

Bombay
 Punjab
 Bihar and Orissa
 North-West Frontier Province

} No information available.

Ankylostomiasis.

34. *General*.—I would refer to my note on this in 1924 report (paragraph 32, volume I).

Statistics.

Burma.—17,297 prisoners were examined for ankylostoma infection in 13 jails against 17,633 in 16 jails in 1924. Of these 5,785 or 33·45 per cent. were found to be infected (7,419 or 42·0 per cent. in 1924). Mergui jail reported the heaviest percentage of infection (57·03); Prome reported 54·42 per cent.; Rangoon 53·90 per cent.; and Meiktila 48·28 per cent.

Madras Presidency.—21,308 examinations were made to ascertain the presence of hookworm infections; of these 13,753 or 64·5 per cent. were found positive: Tanjore district and Mandapam emigration camp accounted for many of these. The intensive educational campaign started in North Arcot in 1923 was continued in Arkonam taluk; but the most important object, *i.e.*, the attempt to influence the people to protect themselves permanently from the ravages of this and other filth-borne diseases by the installation and use of sanitary latrines, was not attained—this was said to be due to lack of funds for the construction of private latrines and to the lack of organised community effort. Proposals to meet this difficulty were submitted to Government; but for further details the original report of the Director of Public Health should be consulted.

The International Health Board of the Rockefeller Foundation has, during the last six years, carried out anti-hookworm survey work and intensive educational campaigns in certain selected districts. Though several district and taluk boards have recognised the need for such expenditure, the campaign has not resulted in any permanent improvement, because there has been no practical response to the repeated warnings regarding the danger of soil pollution and the necessity for the construction and proper use of suitable private and public latrines.

Central Provinces.—Investigation into the prevalence of hookworm was carried out in the jails where most of the staff have for long been trained in this work and the results have been summarised in the following very interesting and instructive note for which I am indebted to Lieutenant-Colonel W. J. Powell, I.M.S., Inspector General of Prisons, Central Provinces:—

"All fresh admissions into the central and district Jails have for the last ten years been examined, and where necessary, treated for intestinal parasites. Particular attention has been given to hookworm infection."

"The investigation has been carried out most effectively at the central and larger district Jails and reports have been submitted annually on the work done. The reports from the Nagpur central jail and the Amraoti district jail have been the fullest; the most thorough work is carried out at Nagpur where classes for the instruction of assistant medical officers were held during 1920 and 1921."

"For several years chenopodium oil was the chief agent used in treatment, but since 1923 carbon tetrachloride has taken its place."

"The health of the provincial jails which steadily improved over a long series of years, in 1914 reached its maximum; it deteriorated slightly during the next few years and in 1918 fell to a low level at which it remained until 1921; but since then has steadily improved and has again regained the level of 1914. The influenza epidemic of 1918 no doubt was largely responsible for the high sick rate of that year and scarcity conditions in the following years up to 1921 were a contributing cause. I feel sure, however, that the too energetic use of chenopodium oil at this period was responsible for a considerable amount of ill-health. When I returned to

the Jubbulpore jail in August 1920 after an absence of six years I found many cases which had undoubtedly suffered from anti-hookworm treatment. This was evidenced by an immediate big drop in weight after treatment, and this fall was not recovered from for periods up to six months. Several prisoners developed chest affections while in this low state and a certain number succumbed."

"The figures of the incidence of infection by hookworm are of interest. The prisoners coming from the following districts show the heaviest infection. Mandla, Raipur, Chanda, Yeotmal, Damoh, Bilaspur and to a lesser extent Akola, Bhandara, and Balaghat. In the main, these are the districts where infection with malaria and bowel diseases is common. Leprosy infection is also commoner in the majority than in other parts of the province, and the standard of civilization is also low."

"In the province generally the incidence by castes and tribes as evidenced in the Nagpur jail which receives most of the long term casual prisoners is—

	Per cent.
Koshtis	48.83
Brahmins	44.77
Chhatris and Rajputs	40
Lodhis	35.42
Mussalmans	23.93
Gonds	29.60
Ahirs	22

Taken by occupation the incidence is—

	Per cent.
Weavers (Koshtis chiefly)	54
Beggars	43.85
Labourers	26.93
Cultivators	18

"Apart from the Koshtis the higher castes show a higher percentage of infection. The jail population in the province is in the main recruited from persons living in the larger towns and villages where the conditions of life are more difficult than in the interior. Koshtis particularly live on the outskirts of towns and large villages and I would venture to think that the majority of high caste people who come to jail live under somewhat similar circumstances."

"Apart from collections of water during and after the rains I am of opinion that the sanitation of small villages is good; this also applies to the better parts of towns and large villages. In the former case the inhabitants can go far afield for the purpose of nature, and in the latter modern sanitation is satisfactory. On the outskirts however of towns and large villages sanitation is most unsatisfactory. Latrines, such as they are, are badly served, and are a source of danger; the whole area is heavily contaminated with faeces; streams, nullahs and casual water are all heavily infected."

"The percentage of infection according to health on admission to jail shows, in good health 31.39 per cent.; in fair health 16.88 per cent. and in bad health 16.66 per cent., and of those in such poor health that they have to go straight to hospital only 3.84 per cent. were found infected. It might appear from this that the presence of hookworm had a beneficial affect, or possibly that the hookworm is somewhat fastidious and leaves a host whose blood has become impoverished."

"The conclusion I would draw from the facts, reported and from many years of jail work are that—

1. Whereas hookworm infection may be responsible for a stunting of growth, etc., in children and adolescents, it has very little affect on the adult population.
2. The treatment with oil of chenopodium in doses sufficiently large to dislodge parasites is dangerous except possibly in very skilled hands.

I was so convinced of the above that I proposed to discontinue the work in the Central Provinces jails in 1923. I, however, met the officer of the Calcutta Tropical Medicine School who was working with carbon tetrachloride and decided to introduce this method of treatment.

3. Carbon tetrachloride is free from danger when used with average intelligence, it is effective in removing infection, and cases of re-infection or remaining infection are uncommon in jails where this method has been used.

4. Infection is most common in persons who live on the outskirts of urban areas or large villages as evidenced by the heavy infection of weavers (Koshtis), Brahmins and such like; it also appears to be more prevalent in damp areas where malaria is common.

5. The regular examination and treatment of convicts, apart from its influence on health, good or bad, is useful in keeping the hospital staff well employed and more handy with microscopical investigation.

6. The examination of prisoners (80 per cent. adult and 90 per cent. male and in the main from urban areas) cannot give a true picture of the state of the general population."

Punjab.—11 cases were admitted to the civil hospital, Amritsar; these came from various parts of the Punjab and the United Provinces. The Director of Public Health states that, outside of the mental hospital, ankylostomiasis is of very little importance in this province.

In *Bengal Presidency* a few cases of ankylostomiasis were recorded.

Leprosy.

35. *General*.—Though the last census enumeration shows over 2,00,000 lepers the probability is that the number in India approximates to 10,00,000. Since 1924 a campaign against the disease has been started through the instrumentality of the British Empire Leprosy Relief Association (B. E. L. R. A.). From time to time I have given accounts of the work proceeding to the Office International and extracts from these are appended to show the development of the campaign.

(a) *Office International, Paris, October 1924 Session.*

In December 1923 the India Office sent to the Government of India a prospectus of the British Empire Leprosy Relief Association with a memorandum regarding the medical policy of the Association, and a questionnaire for workers and agencies for the relief of leprosy, pointing out at the same time that the India, Colonial, and Foreign Offices were represented on the Council of the Association and suggesting that the questionnaire be circulated, as was being done in other British Possessions, to all Medical Officers of Government and others who might be in a position to afford useful information on the subject of leprosy. As a result of this, on 28th February 1924 the questionnaire was circulated by the Government of India to all local Governments with the request that the information required be obtained and forwarded to the Director General, Indian Medical Service, for collation and transmission to the Secretary of the B. E. L. R. A. in London. In the meantime the appeal of the parent Association had been launched at a meeting in the Mansion House, London, and His Excellency the Viceroy of India had associated himself closely by a cablegram message with the objects of the campaign especially in its relation to the Indian Empire.

From this, on the suggestion of His Excellency the Viceroy, there gradually emerged a proposal to establish a daughter Association for India—an Indian Empire Leprosy Relief Association. This has now been constituted with a General Council, a representative Executive Committee, and a Medical Advisory Committee which includes the administrative medical and public health heads of the Government of India and the research workers on leprosy.

Working with the administrative organisation of the Indian Red Cross which has many provincial branches, throughout India, the Secretary of the I. E. L. R. A. hopes to arrange for the launching of the Indian campaign by His Excellency the Viceroy in October 1924.

The lines of the campaign will follow closely those expounded at the Mansion House meeting in London by that distinguished officer of the Indian Medical Service—Sir Leonard Rogers; but will be modified, on the recommendation of the Medical Advisory Committee, to suit local conditions in the light of the research work now being done in the Calcutta School of Tropical Medicine. The campaign will be directed towards assisting, advising, supplementing and co-ordinating the efforts of existing and future agencies on the following lines:—

(a) By helping all lepers in India by the provision of the latest treatment for all, and suitable accommodation for those who are homeless and destitute.

- (b) By supplying the latest medical information and the most approved drugs to leper institutions, settlements, and hospital clinics; and by training those in charge of lepers in the efficient application of the treatment.
- (c) By supplying approved schemes of segregation with the best treatment.
- (d) By collecting information and statistics, and by issuing, in simple form, bulletins of information and advice to all workers amongst lepers.
- (e) By supporting further research into both causation and treatment of leprosy, with a view to discovering more efficient methods of prevention, and simplify, shorten, and cheapen the curative measures.
- (f) By opening leper clinics in connection with hospitals in selected large towns where the earlier and more amenable cases could be diagnosed and could receive regular treatment in the event of their being unwilling to enter a leper asylum.

(b) *Office International, Paris, April 1925 Session.*

In January 1924 His Excellency the Viceroy published his appeal to the princes and peoples of India and His Royal Highness, the Prince of Wales expressed to His Excellency the Viceroy the great satisfaction that he felt in seeing the effort which India was about to make to exterminate this ancient disease and had little doubt that with their accustomed generosity the princes, the land owners and all sections of the community would share the success of His Excellency's appeal.

(c) *Office International, Paris, April-May 1926 Session.*

From time to time during the last two years information has been given to the Comité regarding the organisation and the measures taken for combating leprosy and the story of the appeal made by His Excellency the Viceroy in the name of the British Empire Leprosy Relief Association. Since October Session the appeal has been closed after it had met with a generous response from both princes and people and had succeeded in raising Rs. 20 lakhs (£1,30,000). In making the appeal His Excellency admitted that the prosecution of the campaign would require a large expenditure of money; but he made it plain that the aim of the appeal was to furnish the Indian Council with a really substantial endowment which would endure for the benefit of future generations and would place on a basis of permanence the work which was being inaugurated.

This amount will be capitalised and the interest will be used in promoting; (a) Intensive research, (b) Provision of short courses of training in the diagnosis and treatment of leprosy; and (c) Propaganda.

Research has been placed in the forefront of the programme and every means is being taken to strengthen the already existing centre of leprosy research under Dr. Muir at the School of Tropical Medicine and Hygiene, Calcutta. Extra workers, better accommodation, and better facilities are being provided, and the facilities offered by the authorities of the School are being extended. The Indian Research Fund Association has also come to the rescue by providing additional funds for actual research under the whole time services of Dr. Muir.

A further development of this research is being financed by the Indian Research Fund Association. This deals with rat leprosy and its production experimentally, and it is hoped, by these observations, to gain much light on the aetiology of leprosy in the human subject.

Next in order is the training of as many doctors as possible throughout the provinces in the diagnosis and treatment of leprosy on modern lines. It is hoped to be able to train at least 30 doctors in two batches at the Calcutta School, these men returning to their provinces and forming a nucleus for instruction.

Thirdly, propaganda will introduce to the notice of the illiterate population the possibilities of arresting the disease by early treatment and the facilities which are being created to meet this demand for out-door curative and preventive treatment as distinct from that in an institution when the case has become practically incurable.

The development of the out-door clinic, much on the lines of a skin dispensary, is looked to with much hope as providing a solution for many of the difficulties which arise in connection with institutional treatment. In future years it is hoped the numbers of those producing infection will have greatly diminished and that, as the numbers at risk decrease, a definite impression will be made on the disease quite apart from that due to isolation measures which are at present only applicable to pauper and voluntary lepers. Apart from this, institutional treatment on the scale necessary to segregate all lepers in India predicates an enormous and prohibitive expenditure.

A small booklet by Dr. Muir on the "Diagnosis, Treatment and Prevention" of this disease is one of the official publications of the Indian Council. It has been brought up-to-date and is distributed free of cost to all persons interested in leprosy. Posters, lantern slides, and leaflets have been prepared and are issued for general popular instruction. A highly interesting cinema film has been prepared to show the facts connected with the disease and the manner in which modern science is dealing with it. This film has attracted crowds throughout the country and very gratifying reports as to its educative value have been received.

A good beginning has now been made on sound lines which provide for a continuance of permanent effort. Provincial Governments and Societies will still be able to provide all that they consider necessary in the way of institutional treatment.

Statistics of Leprosy.

Madras Presidency.—Leprosy was said to be on the increase in many parts of this Presidency. In many instances lepers were stated to be actively engaged in the sale and distribution of milk and other foodstuffs. No attempt had so far been made to restrict movements of lepers or to limit their employment in trades. A sum of over 1½ lakhs was raised for the leprosy relief fund.

Central Provinces.—350 cases were treated in the Government and Mission hospitals; about 200 patients were treated at the leper asylum, Chandkhuri (Drug district). The mission asylums in the districts of Raipur, Bilaspur, Mandla and Amraoti and that at Rajnandgaon reported 286 admissions. The disease was said to be very prevalent in the Chhattisgarh district; there is need for a leprosy survey of the Division. 9 Medical Officers were sent departmentally for a special course of training in leprosy under Dr. Muir at the Calcutta School of Tropical Medicine. A sum Rs. 1,99,915 was received in subscriptions for the British Empire Leprosy Relief Association (Indian branch).

Burma.—Sub-committees of the Indian Branch of the British Empire Leprosy Relief Association were formed in almost every headquarter town in the province and Rs. 57,344 were received as subscriptions. In Mandalay leper asylum 44 cases were treated. No alien lepers entered or attempted to enter the province, but 13 Indian lepers came through the port of Rangoon. Proposals for the prohibition of the entry of lepers by sea were under the consideration of Government.

Bengal Presidency.—Information is scanty; but many cases were said to have been found scattered throughout Bankura district.

Rabies.

36. *General.*—The experiments to determine the effects of heat on the vaccine, and which were referred to in last year's report (paragraph 33, Volume I) were completed. They demonstrated that the supposed injurious effect of heat on the vaccine was negligible and that, for practical purposes, the vaccine could stand transit with ordinary precautions even during the hot weather.

There was therefore apparently no reason why the system of issue to approved centres in the plains should not be extended; but, about the end of 1925, information reached Kasauli of the work being done in Europe, more especially by Alivisatos and Hempt, with an etherised live vaccine, and, after the literature in regard to this method had been obtained through the good offices of the League of Nations, Health Bureau in Geneva, it was decided that the Director of the Pasteur Institute, Kasauli—the parent Pasteur Institute of India—should undertake

a series of experiments with this new vaccine, and that, pending the results, the general policy should remain the same and no new centres, military or civil, should be established in the plains. The reasons were obvious as, if it proved necessary, to adopt an "etherised live vaccination" as the best form of therapy, it would be impossible to allow it to be broad-casted in the same way as the dead carbolised vaccine—this was the position in the end of 1925.

The institutes remained the same as in last report.

Statistics of Rabies.

Central Provinces.—Rabies was said to have caused 187 deaths (190 in 1924). 355 dog-bite cases in municipal towns and 76 cases of bites by other animals were recorded. In Bhandara town 59 persons were said to have been bitten on one night by a rabid jackal. 12,950 stray dogs were killed in municipal towns. Arrangements for anti-rabic treatment exist at present at the Mayo Hospital, Nagpur, and the Victoria Hospital, Jubbulpore. It was proposed to open centres at Hoshangabad, Raipur and Akola.

Bombay Presidency.—270 deaths were reported (182 males and 88 females)—51 in towns and 219 in rural areas.

Punjab.—216 deaths, of which 33 were in towns and 183 in rural areas, were reported. Anti-rabic treatment was started at the provincial bacteriological laboratory of the King Edward Medical College at Lahore.

Madras Presidency.—485 deaths were registered—421 in rural areas and 64 in municipal and rural towns.

Bengal Presidency.—304 deaths from this cause were recorded during 1925 showing an increase of 53·5 per cent. over the average of the last 10 years and a decrease of 11·3 per cent. as compared with the previous year.

The following table shows the mortality from rabies in the various provinces in British India during 1925.

Provinces.	DEATHS FROM RABIES DURING 1925.			Deaths from rabies in 1924.
	In rural areas.	In urban areas.	TOTAL.	
Delhi	1	...	1	
Bengal Presidency	261	43	304	343
Bihar and Orissa	299	21	320	238
Assam	40	3	43	52
United Provinces	270	61	331	288
Punjab	183	33	216	135
North-West Frontier Province	2	1	3	2
Central Provinces	154	33	187	190
Madras Presidency	421	64	485	364
Coorg . . . . .	...	...	...	...
Bombay Presidency	219	51	270	248
Burma	133	27	160	183
Ajmer-Merwara	Not available			...
British India	1,983	337	2,320	2,044

Mortality from Wild Animals.

37. The total number of persons killed by wild animals in British India during 1925 amounted to 1,962, as against 2,587 in the previous year. Tigers were responsible for 974 deaths, leopards for 181, wolves for 265, bears for 82, elephants for 78, and hyenas for 6. Deaths were highest from tigers in Madras, from leopards in the Central Provinces and Berar, from wolves in the United Provinces, from bears in Bihar and Orissa and from elephants in Assam. Of the 376 deaths from "other animals," 73 were assigned to wild pigs and 98 to crocodiles and alligators. The highest number of deaths from all wild animals occurred in Madras (452), Bihar and Orissa, the United Provinces and the Central Provinces and Berar coming next in order. The mortality from elephants showed a marked increase in provinces where these animals are found wild. There has been a noticeable decrease in deaths from all other animals except bears in almost all provinces.

Deaths from snake bite fell from 19,867 to 19,258. Decreases occurred in Madras, the United Provinces, the Punjab, Burma, Bihar and Orissa, the Central Provinces and Berar and Assam; but Bombay and Bengal have reported slight increases.

During the year 21,605 wild animals were reported to have been destroyed, of which 1,609 were tigers, 4,660 leopards, 2,485 bears and 2,361 wolves. A sum of Rs. 1,55,667 was paid in rewards, against Rs. 1,69,765 in the previous year. The number of snakes destroyed in India proper decreased from 47,106, to 41,004, and the rewards paid for their destruction were Rs. 1,579 as against Rs. 1,403 in the previous year.

Dracontiasis (Guineaworm).

38. Little information regarding dracontiasis is given in the annual provincial reports, and it will be necessary to consult various scientific monographs for information regarding it. In the Central Provinces, Damoh, Akola and Wardha were noted as showing cases; whilst in Madras Presidency Guntur, Nellore and Bellary were mentioned. The disease is common, of course, in the Bombay Presidency.

Schistosomiasis.

39. *Burma*.—A report was received of the presence of cases of infection with "*schistosoma japonicum*" in the Northern Shan States and as there was a possibility that the infection might have been introduced from China, the Indian Research Fund Association provided funds for an investigation. The intention was to make a molluscan survey of the suspected area to determine whether the known intermediate host of the parasite existed under suitable conditions and whether it might be necessary to take special steps in regard to the disease.

Goitre.

40. There was little or no mention of goitre in the annual reports and again it will be necessary for any one desirous of information to collect and consult the scientific bibliography on the subject. In the Burma provincial report, however, it was said to be very common

in some parts of the province especially in the upper reaches of the big rivers. In the Pakokku hill tracts over 98 per cent. of the women and 60 per cent. of the men were said to be affected. This disease was said to be prevalent also in Meiktila district.

Fairs and Festivals.

41. *General*.—Most of the provinces have paid special attention for a long time to the perfecting of a careful annual organisation to meet the sanitary requirements of the masses which flock to these religious melas. The United Provinces can probably claim the most extensive organisation for this, largely in view of the fact that these provinces contain many of the holy places on the banks of the Ganges and Jumna.

The charge formerly levelled against these fairs that they were a fruitful *font et origo* not only of local but even of worldwide epidemics, is becoming less justifiable since the provincial public health departments have undertaken a rational control. Further, this control has been extended to cover in many instances the pilgrim routes to the montane shrines. This control is a very essential and imperative obligation of provincial Governments and the perfecting of the organisation to allow of it should be encouraged in every way as its neglect may spell epidemic disaster, not only locally, but provincially nationally and even, in such diseases as cholera, internationally.

Provinces.

Punjab.—All the important fairs and gatherings held in the province passed off successfully except that at Katas which became cholera infected as the result of importation of infection from Kashmir State. The disease was spread through the neighbouring districts by the returning pilgrims and in about 10 days 800 cases and 320 deaths were reported. For want of funds, the watersupply arrangements at the Katas fair were said to be primitive and roadside sources of watersupply were open to the grossest pollution. The district health officer had made arrangements for the protection of the watersupply of the fair ground and for general sanitation on the basis of a normal attendance of 15,000 people; but over 50,000 attended. As a result the watersupply arrangements broke down completely and epidemic conditions became inevitable.

Assam.—The Sidheswari mela passed off smoothly.

United Provinces.—All the important fairs and religious gatherings held in the province presented a clean bill of health, except for the following:—(a) 5 imported cases of cholera were recorded at the Katki fair (Ajodhya); (b) 1 death from cholera at the Piran-i-Kalyar fair (Saharanpur); (c) 2 cases of small-pox from Lakarmandi ghat, Sawan Jhula fair (Ajodhya); (d) 3 imported cases of plague with 2 deaths, and 1 death from small-pox at the Arya Samaj Centenary at Muttra.

Bombay Presidency.—The fairs and festivals passed off without epidemics.

Bihar and Orissa.—In regard to the Rath Jatra festival at Puri the Director of Public Health says that the climatic conditions, the density of population and overcrowding during melas, the debilitated state of many of the pilgrims, the feeding arrangements and the inadequacy of the conservancy arrangements to deal with such an enormous increase of population, together with the defective water-supply, all com-

bine to produce epidemic cholera, which cannot be prevented without comprehensive permanent improvements in the conservancy and water-supply of the town and in the organisation of preventive measures. Both Puri and Sonepur fairs were specially arranged for.

Madras Presidency.—Although cholera existed in severe form in seven or eight districts the festivals passed off in most cases without any untoward incident. (a) The *Karamadai* festival in Coimbatore district, which has, frequently, been the starting point for widespread epidemics of cholera in that area reported no cases of infectious disease. (b) Cholera was prevalent in the neighbourhood of the great Vaikunta Ekadesi festival but the precautionary measures taken prevented an outbreak. (c) The arrangements for the Palni festivals were completely successful.

Central Provinces.—No epidemic disease was reported at any of the fairs. The usual sanitary arrangements were made and all sources of water-supply were permanganated.

Bengal Presidency.—(a) On the downward voyage at the Ganga Sagar Mela, there was no infection or serious sickness among the pilgrims except 2 cases of acute diarrhoea, which were said to have been handed over to the mela authorities at Sagar. On the return journey, however, 16 cases of cholera with 5 deaths occurred, and 6 other deaths were reported among returned pilgrims in Calcutta. Between 1,11,534 to 1,25,000 pilgrims attended. Water was chlorinated at the pumping station. The bathing and washing tanks were treated with bleaching powder thrice daily. (b) Nangalband fair attended by about 5 lakhs pilgrims passed off satisfactorily; but 9 cases of cholera with one death were reported. 40 contacts and the volunteers were given anti-cholera inoculation.

Public Health Administration and Staff training.

42. *Madras Presidency.*—A reference to the figures which follow will indicate the advance made since 1920.

	Number during.	
	1920.	1926.
Assistant Director of Public Health	1	3
Health Officers	5	55
Health Inspectors	*189	261

*80 cholera parties.

47 candidates qualified as sanitary and assistant sanitary inspectors. 60 took the first-class vaccinators class at the King Institute, Guindy, and 21 health inspectors and 11 sanitary inspectors in the employ of local bodies, underwent the quinquennial training in the medical college. A conference of health officers was held. Health Officers were permitted by Government to take post-graduate courses in the Calcutta School of Tropical Medicine and it is arranged 3 shall go soon.

Under the heading of "*General Remarks*" Director of Public Health, at page 42 (paragraphs 138 to 151) of his annual report gives an exhaustive and interesting account of various activities of his department other than those usually dealt with in the report. A careful study of it will repay any reader who wishes to realise the magnitude of the task which confronts a Director of Public Health of an Indian province who takes time and trouble to think out some of his problems, it provides an excellent argument—if one were needed—for the provision in every provincial public health organisation of an expert head whose duties are entirely concerned with the maintenance of the public health.

Burma.—The construction of the Harcourt Butler Institute of Public Health was nearing completion. The public health inspector's training class was conducted on lines similar to those of the previous year; 13 of the 24 students passed.

Punjab.—The districts of Ambala, Montgomery, Lyallpur, and Sialkot were provided with district medical officers of health and 6 more appointments were sanctioned. At present 16 of the 28 districts have the appointments of district medical officers of health sanctioned and the remaining districts are served by the twelve assistant epidemiologists. The necessity for provincialising the district medical officer of health was under consideration of Government. The number of urban medical officers of health was raised from 8 to 9. The formation of a general epidemiological fund, from which grants-in-aid can be given to local bodies for the suppression of epidemic diseases was accepted. An emergency staff of 10 medical graduates, and 13 sanitary inspectors, with 6 sub-assistant surgeons for plague work (for 5 months) was entertained. Director of Public Health is convinced of the value in district work of the sanitary inspector of whom he hopes to have one per district permanently. Though much progress is reported during the 5 years in which the re-organisation scheme has been in operation, Director of Public Health is of opinion that the real foundation cannot be considered as laid until there is one medical officer of health and one sanitary inspector in every district.

United Provinces.—The D.P.H., I.P.H., and sanitary inspectors classes were held as usual. A sum of rupees one lakh was voted by the provincial legislature for expenditure on the building of the provincial Hygiene Institute. No examination in D.P.H., Part II was held; but of 8 candidates for part I, 7 were successful. Of 37 candidates for the apprentice sanitary inspectors examination, 26 passed; of 26 candidates for sanitary inspectors examination 24 were successful; of 4 candidates for chief sanitary inspectors examination 3 passed. The district health service was extended to 16 districts. Proposals to provincialise district medical officers of health were submitted.

Bihar and Orissa.—7 health officers were employed in towns only. The sanitary school turned out 23 health inspectors. 97 vaid and hakims were trained in disinfection and simple preventive measures against epidemic diseases.

School Medical Inspection.

43. *General.*—This branch of health work is still in its infancy in India. The normal development of infant welfare work in Europe,

especially in regard to the child between 1 and 5 years, *i.e.*, the pre-school child, is now assuming a more definite organisation and part of this scheme is that this activity should be linked up with the school work largely through making use of the school treatment centres. It will be a very long time before any such system materialises in India; but the first step is for large municipalities to get down to systematic school inspection. The question is a financial one as plenty of good young Indian graduates must be looking for work of this kind. The Health Officer of Simla has set a very good example in a small way. Once established municipally it is bound to extend into the rural areas in time. I have attempted, but without success, to construct a table showing the school medical inspection activities but this has been impossible except for Burma and Bengal owing to paucity of information. I hope that in future reports as much information as it is possible to give will be furnished in regard to (a) number of schools in the province, (b) number of schools inspected, (c) number of scholars seen, (d) number and percentage unprotected against small-pox, (e) number and percentage protected by vaccination or re-vaccination, (f) number and percentage with defective teeth, (g) number and percentage with defective eyes, (h) number and percentage with good, fair and poor nutrition, (i) number and percentage with enlarged spleen, (j) number and percentage with contagious disease, (k) number and percentage with skin disease, (l) number and percentage with defective hearing, (m) number and percentage with anæmia, (n) number and percentage with tuberculosis, (o) number and percentage with alimentary disease, (p) number and percentage with heart disease, (q) number and percentage with lung diseases.

Provinces.

Burma.—Out of 285 schools, 122 were in the charge of medical officers. The children, examined in 85 of these schools, numbered 22,451—(15,874 in 1924). Of these 993 children (or 4·42 per cent.) were found unprotected against small-pox and 7,549 (or 33·18 per cent.) were protected by revaccination. The care of teeth is still greatly neglected and the defective percentage was 18·66 (17·29 per cent. in 1924); that for defective eyes 13·10 (9·60 in 1924); that for throats and noses 23·83 (19·26 in 1924). 19,574 children were examined in respect of nutrition and 956 (4·88 per cent.) and 4,968 (25·38 per cent.) were found poor and fair, respectively. The percentage of pupils affected with other diseases was—anæmia 5·94, defective hearing 2·06, alimentary diseases 2·5, tuberculosis 1·01, skin disease 4·7, heart disease ·78, lung disease ·65. This is a big step forward in practical hygiene.

Central Provinces.—(a) 55,448 boys and 6,022 girls were examined by the dispensary medical officers as compared with 50,400 boys and 5,637 girls during 1924. Of these 428 were found unvaccinated, 837 with enlarged spleen and 388 with contagious diseases. (b) The epidemic dispensary staff inspected 57,671 children in 1,223 schools in rural areas and found 2,386 unvaccinated, 2,578 with enlarged spleen and 2,435 with contagious and other skin diseases. Steps were taken to vaccinate unprotected children. A thorough annual medical inspection of boys in Anglo-Vernacular schools was done at Jabulpore, Sihora, Murwara, Khandwa, Drug and Yeotmal.

United Provinces.—1,872 schools were inspected and 67,582 scholars examined by the Assistant Directors of Public Health on general duty by municipal and district medical officers of health, and their assistants. The attention of all concerned was called to the orders on this subject.

Bihaar and Orissa.—The five school medical officers visited 239 schools, examined 12,222 pupils and delivered 1,313 lectures. The question of the insufficiency of the diet of students, of the prevalence of defective vision, and of the need of spectacles by many scholars were brought forward. The sanitation of 33 high schools was inspected by the Assistant Directors of Public Health and was found satisfactory.

Bombay Presidency.—Schools were said to have been inspected by Assistant Directors of Public Health and courses of lectures in hygiene and public health were delivered to students at the medical schools of Poona, Ahmedabad and Hyderabad (Sind). 12 sites for schools in the central Registration district were inspected. In Bijapur district the vernacular school at Bidi was inspected and a spleen census taken. The Assistant Director of Public Health, Sind, examined a few school children. School inspection is not advanced in this Presidency.

Bengal Presidency.—5,078 boys were examined, including 2,036 examined in the Asansol Mines Board of Health; of these 23·9 per cent. were well nourished, 61·8 per cent. were fairly nourished and 14·3 per cent. ill-nourished. The Bengal youths weighed on an average 7 lbs. less than a similar class of European boys. 3·6 per cent. had skin diseases, 8·5 per cent. defective teeth, 3 per cent. ear trouble, 13·7 per cent. defective vision, and 2·6 per cent. enlarged tonsils. 6·6 per cent. were unvaccinated and 2·8 per cent. had enlarged spleens.

Mines.

44. Only a few areas furnished detailed reports to the provincial Directors of Public Health who would no doubt welcome such reports in future.

Madras Presidency.—Mining operations were in progress in seven districts, viz., Vizagapatam, Nellore, Anantapur, Kurnool, Salem, Bellary and the Nilgiris. The district health officer, Vizagapatam, Nellore and Anantapur inspected 8, 5 and 1 mines, respectively, more especially with reference to their water-supply. No epidemic occurred in any of the mines and the health of the mining population was satisfactory. Proposals were made to prevent contamination of the drinking water in the mines in Thummaragudi reserve (Bellary) and for the construction of a reservoir near the drinking water well in the mine in the Gooty taluk (Anantapur). In other districts the source of watersupply was said to be satisfactory. The district health officer, Nellore, suspected that the prevalence of hookworm among the employees in one of the mines in his district was due to want of latrine accommodation.

Burma.—A. Burma Corporation, Namtu.—There was no outbreak of any epidemic disease.

At the Asiatic hospital, Namtu, additional wards were added, giving a total of 105 beds. The staff of assistant medical officers was increased

by two. 8 dead rats from Panghai and Ehaung were examined but none was found infected. 9 cases of relapsing fever occurred among in-coming coolies. The following were recorded:—7 cases of typhoid, 2 mild cases of small-pox and 1 mild case of measles, 9 cases of dog-bite, 8 cases (with 1 death) of epidemic dropsy and 62 cases of tuberculosis. A tuberculosis centre in Upper Burma is said to be a necessity. There were 10,350 admissions for malaria, 8 for ankylostomiasis, 16 for plum-bism. Conservancy and watersupply were satisfactory. Milk farms were periodically inspected. No schistosomiasis was detected though carefully looked for.

B. Tavoy and Mergui districts. The sanitary condition was the same as in the year preceding. No event worthy of special record occurred.

Bengal.—Asansol Mines Board of Health.—The following table gives a few particulars regarding vital occurrences in the Asansol Mining Settlement:—

	1924.	1925.
Births	8,568	9,510
Infant deaths	1,248	1,114
Infant death rate per mille	146.0	117.0
Total deaths	6,155	5,305
Cholera	317	89
Small-pox	10	83
Fever	739	648
Dysentery and Diarrhoea	233	191
Influenza . . . . .	...	2
Respiratory diseases	1,207	1,067
Snake-bite	16	9
Other causes	3,633	3,216

The death rate in the Settlement was the lowest recorded during the last 8 years. 9,510 births and 5,305 deaths were checked with no omissions. The low infant mortality has again been ascribed to the satisfactory local hygienic conditions as well as to the activities of the midwives employed by the Board. Small-pox assumed epidemic form in Raniganj municipality owing to the large number of unvaccinated children within municipal limits.

Bihar and Orissa.—Jharia Mines Board of Health.—The population of these mines was 453,948. The following two tables show the chief features of the vital statistics of these mines during 1925:—

	Number.	Ratio for 1925.	Ratio for 1924.
Total births	2,533	20.1	16.95
„ deaths	1,799	14.3	17.34

	Attacks.	Deaths.	Death ratio for 1925.	Death ratio for 1924.
Cholera	273	104	0·8	2·71
Small-pox	382	20	0·1	·09
Influenza	2,016	39	0·3	·11

Industrial Workers.

45. *General.*—Information in provincial reports is woefully deficient on this subject of industrial hygiene except where, as in Bombay Presidency, factory inspection is a duty of the health department. There is little doubt that this branch of public health work will require to and will receive much greater attention in the future just as it has done in western countries and in United States of America. Already many very enlightened mill and mine owners companies such as many if Cawnpore, Calcutta, Nagpur and Asansol to mention only a few at random, as well as the whole tea planting industry have shown commendable business acumen in grading up the economic and work conditions of their employees. This must evolve and extend to the smaller establishments; but it demands more attention than it has received to date.

Bombay Presidency.—Inspection of factories by the health department was continued. Three ginning factories and presses and one locomotive workshop in Nasik district were inspected and defects regarding smoke vents, watersupply, ventilation, light and conservancy were brought to the notice of the managers, etc. The sanitary arrangements in the locomotive workshop at Igatpuri were found to be satisfactory. In the Central Registration district, the Sholapur mill, the sugar factory of Belapur and 8 ginning and pressing factories in the Ahmednagar district were inspected; the Sholapur mill was advised regarding the running of a newly installed septic tank. As the ginning and pressing factories had inconvenient and defective latrine arrangements, rebuilding of latrines on a standard plan has been promised in most cases. The Assistant Director of Public Health, Guzerat Registration district, inspected 7 mills and found that suitable arrangements for artificial lighting in factories where night-work is allowed were badly needed and that conservancy arrangements in some cases were defective. It was urged that greater care should be exercised in providing protection against fire. The factories are without a dispensary or first-aid outfit for emergency cases. The Assistant Director of Public Health, Sind Registration district, visited 10 factories—5 in Karachi city and 5 in Larkana district. He reports that, generally speaking, no thought whatever is given to sanitation in the small mills and workshops; the larger ones usually provide simple sanitary measures and pay some attention to watersupply, conservancy, ventilation and accommodation. Welfare work, medical aid and the recording of health statistics have not yet received attention from the managements. None of the factories inspected are said to have any welfare scheme for their workers.

We know from other sources that the above picture is not by any means typical of industrial conditions in certain areas and that in Cawnpore, Nagpur, Calcutta, to mention only a few places, much thought has been given to the workers.

Railways.

46. Only three reports are again available, as apparently some railways do not publish any medical reports. This makes the paragraph very incomplete in view of the numbers omitted; but an attempt is being made to have it more complete in future.

(a) *Bombay, Baroda and Central India Railway*.—280,863 new cases were treated at the Company's dispensaries during the year 1925-26, including 52,213 cases (18·5 per cent.) of malaria. Infectious diseases causing quarantine and loss of time to the Company are said to have increased on account of small-pox in the Northern Section of the Systems. Of 195 such cases treated 98 had been vaccinated, 97 were unvaccinated, and among the latter 6 deaths occurred.

At the anti-rabic centre, Ajmer, 135 railway employees and their families were treated; at the Ahmedabad centre 4 cases were treated; at the Parcel centre 12 cases were treated. New dispensaries were opened at Ahmedabad and Sewai-Madhupur. 2,084 small-pox vaccinations and 173 anti-typhoid and 157 anti-plague inoculations were carried out.

(b) *Madras and Southern Mahratha Railway*.—With the exception of plague at certain stations in the Hubli district, there was no serious out-break of infectious disease. For prevention of any serious extension of plague among the railway staff, evacuation and inoculation were resorted to; 2,724 persons were inoculated in the Hubli district.

198,568 cases were treated during the year 1925-26 as against 200,862 in 1924-25. Malaria was responsible for 13,656 cases, dysentery for 3,635, diarrhoea for 5,032 and accidents, etc., for 176,164. 94 deaths are reported to have occurred. 6,528 vaccinations and revaccinations were performed by the railway medical staff. A system of quarterly reports on dispensaries and on the sanitation of stations by district medical officers has been introduced.

Ambulance classes were held at the Central Station, Perambur and Royapuram. 92 passed the first-aid.

3. *South Indian Railway*.—20,110 cases were treated. Epidemic diseases were responsible for 78 cases, fever for 1,960, venereal diseases for 204, diseases of the digestive system for 3,978, diseases of the nervous system for 364, skin diseases for 995, respiratory diseases for 1,233, diseases of the urinary and generative system for 219, diseases of the organs for 2,250 and poisons for 114. Deaths numbered 168—an annual rate of 8·35 per 1,000 admitted to sick list and of 5·29 per 1,000 employees. Influenza which was prevalent caused 3,519 cases with 7 deaths, malaria 1,016 cases with 4 deaths, typhoid 57 cases with 4 deaths and dengue 26 cases.

Watersupply was not satisfactory at Salem and Coonoor.

District Sanitary Committees are now dealing with "First Aid" with satisfactory results. All express trains were fitted with accident boxes.

Indian States.

47. Statistics for the few Indian States received have been summarised in the tables below. The population concerned is just over 7½ millions the majority of whom are in Mysore State. The monthly returns received have enabled the tables to be made.

Note. — Compiled from the monthly returns of vital statistics. Birth figures for Kalsia State have been compiled from the fortnightly returns.

Indian States.	POPULATION.			BIRTHS.				Total deaths from all causes.	Death rate.
	Male.	Female.	Total.	Male.	Female.	Total.	Birth rate.		
Jind State	169,658	138,525	308,183	Not available		10,882	35.31	8,414	27.30
Bhagat State	5,662	3,843	9,505	43	50	93	9.78	92	9.68
Suket State	29,014	25,914	54,928	Not available		843	15.35	804	11.00
Kalsia State	Not available		57,371	1,043	814	1,887	32.89	1,107	24.52
*Maler Kotla State	Not available		80,322	611	401	1,012	12.61	671	8.35
Jawahar State	25,926	23,736	49,662	919	893	1,812	36.50	1,235	24.87
Dhrol State	11,609	12,031	23,640	Not available		849	35.90	437	18.50
Kolhapur State	418,376	415,350	833,726	Not available		26,986	32.37	16,331	19.60
•Mysore State	2,985,541	2,874,411	5,859,952	51,139	49,443	100,582	17.16	102,263	17.46
TOTAL . . . . .	...	...	7,277,289	..	...	144,946	19.92	131,454	18.06

* Compiled from annual returns.

Note—Compiled from the monthly returns of vital statistics.

	CHOLERA.		SMALL-POX.		PLAGUE.		FEVERS.		DYSENTERY AND DIARRHŒA.		RESPIRATORY DISEASES.		ALL OTHER CAUSES.	
	Total deaths.	Ratio per 1,000	Total deaths.	Ratio per 1,000	Total deaths.	Ratio per 1,000	Total deaths.	Ratio per 1,000	Total deaths.	Ratio per 1,000	Total deaths.	Ratio per 1,000	Total deaths.	Ratio per 1,000
Indian States.														
Jind State . . .	...	...	29	·09	1,312	4·26	5,596	18·16	33	·11	1	·00	1,445	4·70
Bhagat State . . .	...	...	...	...	...	...	81	8·53	...	...	4	·42	7	·77
Suket State . . .	...	...	...	...	...	...	525	9·56	21	·40	12	·22	46	·84
Kalsia State . . .	3	·05	10	·17	...	...	1,357	23·65	1	·02	5	·06	31	·54
*Maler Kotla State . . .	...	...	37	·46	...	...	483	6·01	27	·34	36	·45	88	1·09
Jawhar State . . .	1	0·3	31	·63	...	...	1,093	22·1	...	...	...	...	110	2·22
Dhrol State . . .	...	...	1	·04	...	...	368	15·57	...	...	5	·21	63	2·06
Kolhapur State . . .	7	·09	117	·14	692	·83	10,033	12·03	821	·98	966	1·16	3,695	4·43
*Mysore State . . .	...	...	7,338	1·25	4,943	·84	50,774	8·65	3,613	·61	3,130	·53	32,505	5·54
TOTAL . . .	11	·01	7,563	1·04	6,947	·95	70,270	·97	4,516	·62	4,159	·57	37,988	5·22

* Compiled from annual returns.

Mysore and Hyderabad (Deccan) are the only States whose reports are available for incorporation.

48. *Mysore State*.—The births registered in the state amounted to 100,582 as against 105,816 in the previous year, the ratio per 1,000, which was 17·16, being ·89 lower than that of 1924 and the same as the quinquennial mean. The urban rate was 27·63 (28·31 in 1924) and the rural rate 15·57 (16·50 in 1924). 102,263 deaths were recorded (124,120 in 1924), giving a death rate of 17·45 as against 21·18 in the previous year.

The infantile mortality rate per 1,000 of recorded births was 102·94 as compared with 114·51 in 1924. Baby shows and health exhibitions were held in all important places; but no organised endeavour has yet been initiated in connection with infant welfare anywhere except in the three cities.

The table explains disease details.

49. *Hyderabad State (Deccan)*.—The information received is for the Fasli year 1334 (6th October 1924 to 5th October 1925). 113,528 births were recorded, the ratio of male to female births being 4·87 to 4·31, in other words there were 113 males born to every 100 females. The Director, Medical and Sanitation Departments remarks

“In the absence of an Act ensuring a correct registration of vital events in these dominions the statistics discussed in the report should be accepted with caution.”

120,957 deaths from all causes were recorded—143,494 in the previous year, the ratio being 9·73 per mille of population. The chief causes of mortality were fevers and plague—79,114 and 14,793 deaths respectively. Circulars encouraging people to be inoculated against plague were issued and 62,984 inoculations were performed. Relapsing fever was reported from Bidar district (30 cases with 2 deaths).

Malaria accounted for 79,114 deaths as against 82,812 in the previous year, the rate of mortality being 6·40 per mille. The Director says:—

“The district sanitary staff is quite inadequate and in the absence of intelligent co-operation of the people as well as of the local fund establishments it is useless to suggest any remedial measures even for the protection of headquarter towns.”

SECTION II.

MEDICAL INTELLIGENCE AND INTERNATIONAL HEALTH
INCLUDING PORTS.

50. The publication by this office of a weekly bulletin or epidemic diseases summary of epidemiological information concerning both India and outside countries was continued. This bulletin, which is roneod, was distributed widely both in and outside of India. It is, in a way, the counterpart in India of the weekly record of Infectious Diseases of Ports published by the Ministry of Health, but it contains additional information of special interest to health officers. Part I is concerned with India only, and is distributed widely throughout India and foreign countries; Part II, which is mainly concerned with information outside of India, is divided into five sections as follows:—

- (A) Far Eastern Bureau, Singapore—latest weekly wireless statement.
- (B) Foreign countries and other ports (excluding Great Britain and United States of America); epidemic diseases mainly.
- (C) Deaths from all causes in certain large cities of the United States of America—latest weekly information.
- (D) Ministry of Health weekly statement on England and Wales (Extracts).
- (E) Notes on current public health literature, with excerpts, *in extenso*.

Part II is distributed in India only.

51. In last year's report I gave an account of the genesis of the League of Nations Health Organisation Eastern Bureau at Singapore and of the steps which had led up to its creation. In February 1925, a Conference which was opened by His Excellency the Governor of the Straits Settlements was held in Singapore from February 4th to 13th, 1925 and was attended by delegates from British India, British North Borneo, Ceylon, China, Federated Malay States, Straits Settlements, French Indo-China, Hongkong, Japan, Netherlands East Indies, Philippine Islands, and Siam, Dr. Norman White of the League of Nations, Health Organisation, acting as President. At this Conference I had the honour of representing British India. The minutes of the Conference have been published by the League and should be consulted for details; but a perusal of the resolutions which have been reproduced will indicate the sphere of activity envisaged for the Bureau.

“The Conference recommends:—

- I. that the first appearance, in any port in Asia and Australia east of Suez, frequented by foreign trade ships, of indigenous cholera, human or rat plague, small-pox, yellow fever, or unusual prevalence or mortality from any other infectious disease, shall be telegraphed to the Bureau without delay,

II. that a weekly telegram to the Bureau be sent not later than Wednesday morning of each week, referring to the previous week ending Saturday midnight. The contents of the weekly telegram to the Bureau should be as follows:—

- (1) Total deaths from plague in important ports.
- (2) Plague infection among rats in important ports.
- (3) Total deaths from cholera in important ports.
- (4) Total deaths from small-pox in important ports. (Reporting of cases of small-pox where possible).
- (5) Particulars of any unusual epidemics in any part of the territory of the countries interested.

The following is a tentative list of "important ports" in the countries represented at the Conference:—

Bombay.	Belawan-Deli.
Calcutta.	Hongkong.
Madras.	Manila.
Karachi.	Foochow.
Rangoon.	Amoy.
Negapatam.	Swatow.
Colombo.	Canton.
Penang.	Shanghai.
Singapore.	Hankow.
Saigon and Cholon.	Dairen.
Bangkok.	Fusan.
Batavia and Tanjong Priok.	Yokohama.
Sourabaya.	Kobe.
Semarang.	Moji and Shimonoseki.
Macassar.	Keelung.

III. that the letter confirming the weekly telegram, to be despatched by the first available post, shall contain also the following information:—

- (a) Total deaths from all causes in important ports.
- (b) Number of cases of, as well as deaths from, each of the above-mentioned diseases.
- (c) Supplementary information regarding plague, cholera, small-pox or other unusual epidemic referred to in the weekly telegram.
- (d) Any information of importance to the Bureau gathered from other sources such as Bills of Health, etc.
- (e) Particulars of any infected ships which have arrived during the week, *e.g.*, name, nature of infection, whether treated or otherwise, whence come, and whither proceeding.
- (f) Information regarding health conditions in ports of secondary importance, similar to that supplied for "important ports," wherever possible.

IV. that all reports of public health interest dealing with the ports and territories as a whole, as well as copies of public health legislation, shall be sent to the Bureau in duplicate, *e.g.*, annual health reports; reports from medical research institutes; scientific papers; municipal health reports of sea-port towns, and monthly meteorological reports,

V. that the Bureau telegraph to all far eastern governments and to Geneva each week, a resumé of all the telegraphic information it has received during the week from the countries in the Far East as well as other information of sufficient importance, and that emergency telegrams be sent to the countries concerned as circumstances dictate,

VI. that the Bureau be authorised in case of urgency to telegraph information direct to any Port Health Officer in the Arena*. When such

* The Eastern Arena includes all territory between longitudes 20° and 160° East of Greenwich, and latitudes 40° N. and 40° S.

action is taken, a duplicate telegram will be sent at the same time to the central Administration,

- VII. that the weekly telegram be sent from the Bureau in code, and if possible broadcasted by wireless, on a fixed day and hour. (The Conference desires to place on record its appreciation of the offer of the Government of the Netherlands East Indies to broadcast the information throughout the Far East and Australia at a cost not exceeding one franc gold per word),
- VIII. that the communication confirming the weekly telegram emanating from the Bureau should take the form of a 'Leaflet', in which health news, from any source, of interest to eastern countries, be incorporated, and that monthly and annual publications be also issued by the Bureau,
- IX. that pending the completion of arrangements for a code, eastern administrations should arrange to telegraph summarised weekly information in plain language regarding health conditions, on the lines laid down in resolution No. II, as soon as possible after the return of the delegates to their respective countries. On receipt of this information the Bureau will commence broadcasting in plain language on a day and time which shall be duly communicated to all concerned,
- X. that an endeavour be made to obtain and distribute regular reports from Kamaran, El Tor, Jeddah and Mecca during the time of pilgrimage,
- XI. that an endeavour be made to obtain regular information from Egypt and the East Coast of Africa as far south as Cape Town.

The Conference hopes :—

- XII. that the full co-operation of the various administrations of the eastern arena, not represented at the Conference, will be forthcoming.

The Conference considers :—

- XIII. that some form of Advisory Council would be of great value to the development of the activities of the Bureau. Its constitution would naturally be international and it is recommended that it function as a special commission of the League of Nations Health Committee to whom it would report. It would take note in an advisory capacity of any or all of the activities of the Bureau. It should meet once a year, and urgent questions arising in the intervals between sessions should be dealt with by correspondence.

The Conference recommends :—

- XIV. that every facility be given by the Bureau to medical officers deputed by any of the far eastern administrations to study the work of the Bureau or to carry out investigations with the material available therein,
- XV. that the Budget and the statements annexed thereto be approved.

A budget was drawn up on the basis of the probable income available which, thanks to the generosity of the International Health Board of the Rockefeller Foundation, was assured of a minimum of \$25,000 (gold) per annum for five years.

52. The Bureau which started work on 1st March 1925 began to distribute information telegraphically regarding 35 ports of the 12 countries represented at the Conference, and, before the end of the year, was dealing with 76 ports belonging to 23 countries, including the chief ports of Asia, Australia and the East Coast of Africa. Almost from the first the arrangements seemed to have worked smoothly largely through the co-ordinated co-operation brought about by the preliminary Conference. The procedure is that the various administrations transmit on each Wednesday morning or earlier to the Bureau telegrams dealing with infectious disease information in their respective countries up to

Saturday midnight of the previous week. This is confirmed by post. Meanwhile the information in these telegrams is condensed into a bulletin which is coded in accordance with AA Code* of the Bureau and is passed, thanks to the generosity of the Governments of French Indo-China and Netherlands East Indies, to the powerful broadcasting stations at Saigon (Indo-China) and Bandoeng (Java). From the former it is broadcasted at 1:30 (G. M. T.) every Friday and is picked up in India by the Jutogh wireless and passed to this office on Saturday. This ensured that all our Port Health Officers had accurate information up to the previous Saturday midnight of all infectious disease occurring throughout the principal ports of Asia, Australasia, and East Africa. By broadcasting expenditure was kept to a minimum. Through the kindness of the Indian Posts and Telegraph Department the Director of Wireless arranged for re-broadcasting from certain Indian ports. This information, together with any additional information arriving, is assembled at Singapore in a weekly leaflet or Fasciculus which is sent by post to all the administrations concerned. Additional special cables were from time to time despatched from the Bureau particularly in connection with the movements of infected ships or ships from newly infected ports. It was further proposed that, as the Bureau developed its sphere of action, its activities would extend to the dissemination of information which was likely to be of value to the Eastern administrations and to the shipping world, such as quarantine notifications, vital and mortality statistics; also that it might act as an instructional centre for health officers concerned in statistical work, as a centre for co-ordinating scientific research work on disease problems of international importance, such as plague, cholera, etc., and finally as a centre for distributing literature and information regarding international health work and the rôle played in this respect by the League of Nations. The first budget amounted to 56,083 Straits Dollars; and the post of Director was entrusted as a part time appointment to Dr. Brooke, Port Health Officer of Singapore. The progress which was able to be recorded by the end of 1925 showed a measure of success which had hardly been anticipated and was the best augury for its future development and usefulness.

53. Largely as a result of the co-operation at Singapore the office of Public Health Commissioner with the Government of India came automatically more directly and intimately into touch with the Health Secretariat of the League of Nations at Geneva, and, during my deputation to Paris for the April Session of the Office International d'Hygiene Publique, I was invited by the Director of the Health Section of the League to visit Geneva in order to see the arrangements there. With the approval of the Secretary of State for India I did this on my return journey to Marseilles, and, during my three days' visit, was able to confer regarding the scientific testing in India of the value of oral bilivaccin as prepared by the method of Besredka of the Pasteur Institute, Paris. It was then arranged that two officers of the research department then on leave (Lieutenant-Colonels Gloster and Mackie) should be deputed at League expense to visit Professors Besredka and Celarek at the Pasteur Institute, Paris and at the Warsaw Institute.

* This special Code was invented by Dr. Brooke (the Director).

This visit was accomplished in July 1925, and a report,* published by the Government of India, described their impressions. Throughout 1925, however, neither India nor the Dominions was represented on the Health Committee of the League of Nations.

54. During the year the various health activities of the League developed very definitely on international lines in so far as concerned Asia. The volume of work done in the name of the League and organised by its Secretariat steadily increased, and its activities definitely entered the domain of Far Eastern administrations by the organisation of an interchange of Health Officers of these administrations in Japan. This interchange, the first in the East, was made possible by the generous offer on the part of the Japanese Government of free railway transport on Government railways throughout Japan and Manchuria. The participating group which was limited to Australia, Burma, Ceylon, China, Dutch East Indies, Federated Malay States, Hongkong, India, Indo-China, New Zealand, Philippines, Russia, Siam and the Straits Settlements met at Tokio on the 18th of October, immediately after the meeting of the Far Eastern Association of Tropical Medicine which some of the participants also attended. Seventeen Medical Officers of Health from eleven administrations assembled and toured till the 4th December examining institutes and the social conditions of the people in relation to hygiene and sanitation in a number of districts and important towns of Japan and in Korea and Manchuria. The Conference finished at Dairen and the Japanese public health services were of opinion that it furnished them with an impetus for reform and development. A report† on this League interchange was written by the delegate of the Government of India (Lieutenant-Colonel Mackie, Director, Haffkine Institute, Bombay) and has been published by the Government of India.

55. In order, however, to appreciate to the full the volume of work undertaken it is necessary to study the annual report‡ of the Health Organisation of the League for 1925. Much that is recorded therein has got no immediate interest for Asia; but the studies on endemic cholera by Major Russell, I.M.S., Professor Barikine and Dr. Cazeneuve, on the public health services of different countries, the handbooks on vital statistics, the various interchanges of Statisticians, Medical Officers of Health, Port Health Officers, Medical Inspectors of Labour and other individuals specially accredited by the League for specific work have all a definite interest. In this connection the visit of a special officer (Dr. Alkovic) from Yugo Slavia on a three months' mission to study malaria was the first visit of the kind which India has had, and he was able to leave India after a very comprehensive tour of three months' duration during which he saw, and I hope appreciated, most of our big malarial problems. Other matters which must claim our attention

* Report on a visit by Lt.-Col. F. P. Mackie, I.M.S., and Lt.-Col. T. H. Gloster, I.M.S., to the Pasteur Institute, Paris, and the State Institute of Hygiene, Warsaw, in connection with the manufacture of Anti-cholera vaccine by Prof. Besredka's method.

† The Interchange of Health Personnel in Japan under the auspices of the League of Nations by Lt.-Col. F. P. Mackie, I.M.S.

‡ C. H. 442, Geneva, April 1926.

in this report are those relating to the revision of the international list of causes of deaths, and to the work of the Malarial Commission in regard to malarial investigation, the teaching of malariology, the alkaloids of cinchona and the skilled help it afforded to other countries, such as Corsica and Albania. It is pleasing to record that Lieutenant-Colonel James, formerly of the Indian Medical Service and now in the Ministry of Health, has throughout taken a prominent part in the work of this Commission of which Lieutenant-Colonel S. R. Christophers, I.M.S., is still the corresponding member for India. The work on public health training, that of the Tuberculosis Commission, of the Opium Commission, of the Sleeping Sickness Commission, and of the Cancer Commission must all command our admiration not only for the extent of the work accomplished by the host of experts engaged, but also for the wide conception the Health Secretariat of the League apparently has of the treatment of such problems. As a co-ordinating factor in international disease it has only one competitor throughout the world—the International Health Board of the Rockefeller Foundation.

56. In last year's report I traced the development of India's relations with the Office International in Paris and pointed out the circumstances which had led up to the annual deputation of the Public Health Commissioner to one of its two annual meetings. The necessity for following closely the trend of opinion in regard to the approaching revision of the International Sanitary Convention of 1912 bulked no less largely than formerly in the claims for this annual representation. It had been originally suggested that the Conference which would undertake this revision should be assembled at the instance of the French Government in October 1925; but, despite the fact that a draft revision had been prepared by the "Office," several other documents had entered the field, whilst the situation had been further complicated by the publication at Washington of the Pan American Code, which dealt with the two Americas. It was therefore decided that the Conference could more profitably be arranged for May 1926, and that the interregnum could be best spent in an attempt to examine the various documents, to extract from them what might be beneficial to the "Office" draft, and, by compromise or arrangement, to incorporate these in the revised draft. This was bound to mean close attention to detail on the part of the delegates.

I had the honour of attending the April-May Session of the "Office" at which 32 delegates from different countries were present and a report on the Session written by me has been printed by the Government of India. The draft Convention received the attention it deserved; but the practical points which emerged were that certain articles in the original draft of 1922 should be amended to make them more comprehensive and clearer, that additions should be made, if and where possible, from the Pan American Code, that articles regarding immigration as a result of the Rome Conference should be added, and that a special chapter should be added, if required, for the Far East. At this Session I had the pleasure of presenting a series of six notes dealing with the work of the Kala-azar Commission, with the Leprosy Campaign, with cholera, with plague, with rat and rat-flea parasites in connection with plague, and with the incidence of tabes and general paralysis throughout India. In view of the reception of my notes I was more firmly

convinced than ever that nothing but good could come from such publicity as was possible within the rules of the "Office," and that the presence, even if only once a year, of an official from India who had first hand knowledge of the work going on there, and of the conditions, was of the greatest importance when controversial matters arose. My general impressions have been embodied in a section of the report written by me for the Under-Secretary of State.

Though I was unable to be present at the October Session of the "Office," India was ably represented by the Medical Adviser at the India Office [Major-General J. B. Smith, C.B., C.I.E., I.M.S. (Retd.)] who was able to preserve the continuity of the position in so far as India was concerned, more especially in regard to the alterations in the draft revision of the Convention.

57. Whilst on deputation in April, I was able to attend by request at the Foreign Office several meetings of the Inter-Departmental Pilgrimage Committee which were concerned to some extent with the quarantine station of Kamaran in the Red Sea. This station, which had come under Government of India since the great war and on account of the abolition of the International Quarantine Board of Constantinople, is situated at the Southern end of the Red Sea and deals with all pilgrim traffic coming to Jeddah from the south. As more than half the pilgrims who underwent quarantine measures at Kamaran were Dutch subjects, and, as a definite understanding on the sanitary control of these pilgrims was specially necessary in view of the Treaty of Lausanne and of the fact that the International Sanitary Convention of 1912 was about to be revised, the Netherlands East Indies desired some share in the control of the arrangements at this station. The question was raised by the Dutch Government, and, with a view to clearing the ground, a Conference was arranged at the Ministry of Health in London. Following a suggestion made by the Government of India that a Dutch medical officer be appointed as a member of the staff of the quarantine station at Kamaran during the annual pilgrimage season, the Netherlands Government proposed that a special study of the sanitary control of the pilgrims coming from the south should be made before the proposition of the nomination of a Dutch doctor was further proceeded with. As a result of communications between the Foreign Office, India Office, Colonial Office, and Ministry of Health and a meeting of the Inter-Departmental Committee on the sanitary control of the pilgrimage, this invitation was accepted with the result that a Conference was convened, presided over by Sir George Buchanan of the Ministry of Health, and attended by Dr. W. de Vogel, late Principal Medical Officer in the Netherlands East Indies and now at The Hague, Mr. C. O. Van der Plas, Netherlands Consul at Jeddah, and myself. The subject was discussed in three parts:—

- (a) the equipment and organisation of the Kamaran quarantine station,
- (b) the provisions to govern the pilgrimage which were proposed by the Office International d'Hygiène Publique for inclusion in Parts II and III of the new International Sanitary Convention,

- (c) measures which could be taken to increase the collaboration between the Netherlands and British and Indian public health authorities in connection with the pilgrimage, and in particular in the day to day work of the quarantine station during the pilgrimage.

After a detailed and friendly discussion which lasted daily throughout a week, the Conference drew up a unanimous note which, later on, served to form the basis for the final discussions leading up to the Anglo-Dutch Agreement of 1926.

58. In October 1925 the Italian Government convened an International Malaria Congress in Rome at which India was specially represented both centrally and provincially. Certain aspects of the malaria problem had been placed on the agenda for exhaustive discussion, such as that of rice cultivation *vis-a-vis* malaria, etc., and elaborate notes had been furnished by the Government of India to the Italian Ministry of the Interior through the India Office. A report on the proceedings was submitted by the Government of India* delegate who attended.

59. I cannot leave this subject without making a passing reference to the biennial meeting of the Far Eastern Association of Tropical Medicine which was held in Tokio in September 1925 and immediately before the League of Nations interchange. From small beginnings in Manila in 1910 this Association has been formed to promote the science and art of medicine in the Far East, to develop and diffuse scientific knowledge, to promote friendly international intercourse between scientific men, to enlighten public opinion in regard to the prevention of disease and to publish the results of scientific investigations. Meetings at Hongkong in 1912, at Saigon in 1913, at Java in 1921, at Singapore in 1923, it developed almost out of recognition at Tokio in 1925.

As a result of discussions over a long period our delegate at Tokio was able to extend an invitation from the Government of India to the Council of the Far Eastern Association of Tropical Medicine to hold their 7th Congress in 1927 in India. On this occasion an opportunity will be afforded of showing Asia and Australasia and perhaps South Africa what has been accomplished in the Indian Empire in the name of medical science, and at the same time of returning the hospitality which has been so frequently and so lavishly extended to our own officers.

60. From the information which has been detailed in the foregoing paragraphs it must be obvious how India's position from the international point of view has rapidly shifted during the last few years. Already she is committed to giving information to various International Bureaux. Apart from such weekly reports as go to the Ministry of Health and to the League of Nations at Geneva she has also routine communications passing between her central Public Health Department and the Office International, the Singapore Bureau and the International

* Lt.-Col. W. F. Harvey, C.I.E., I.M.S.

Bureau of Statistics. In addition her health department is in close direct touch with most of the principal health departments in the East and America, whilst the accumulation of documentation arriving in my office from these sources and more especially from the League has led to increase of correspondence with all provincial directorates as well as with the ports. A few years ago India might have been excused for any delinquency in international matters; but a time has arrived when this is no longer possible. India, through her delegations to the Assembly of the League and through her commerce, is now called upon to take her position amongst the nations of the world and more especially of the East, and, in order that she may do so creditably in so far as public health is concerned, she must be prepared, not only to receive information but to give it, and, if necessary, to demonstrate her institutions and her organisation to enquirers from outside. It is only thus that she will gain that confidence of other nations which is so necessary for her both commercially and hygienically.

Kamaran.

61. The quarantine station at Kamaran functioned for the southern pilgrim traffic. The first ship to move was the S.S. "*Jehangir*" from Bombay on 19th May 1925, the last to leave was the S.S. "*Akbar*" on 4th June 1925. The necessary medical staff required for the camp was provided by the Surgeon General with the Government of Bombay. They were despatched to Kamaran by passenger and pilgrim ships.

Major Ports.

62. The results of the conference assembled in November 1924 by the Department of Commerce at which the question of central port control was discussed in general terms were not very apparent throughout 1925. In so far as port health was concerned the fact that we were on the verge of a revision of the International Sanitary Convention served to stay to some extent the normal progress in organisation. It was realised that, following on this revision and ratification of a new Convention, various technical revisions would be essential; thus new Indian port rules, revision of the Pilgrim Act and of the Merchant Shipping Act to bring them into line with the revised Convention or with any new mutual agreement such as the Anglo-Dutch Agreement would be necessary. On this account the port organisation remained as in 1924, the local Governments acting as agents. I was able, however, to visit Calcutta, Bombay and Rangoon in the course of my winter tour and to examine various aspects of the problem in these ports. In virtue of my journey to Singapore in connection with the establishing of the League of Nations Bureau, already referred to, I was also able to see in detail, through the courtesy of the Principal Chief Medical Officers, Straits Settlements and Federated Malay States, the port activities in

Singapore, Port Swettenham and Penang. These visits were both instructive and valuable to me, more especially in connection with the future grading up of the major ports in India.

(a) *Port of Calcutta.*

63. *Statistics.*—1,096 inward bound and 1,136 outward bound vessels were inspected; on these 207,605 crew and 217,761 passengers were passed while 168 crew and 417 passengers were rejected. On incoming ships 17 cases of infectious disease were detected and removed to hospital.

Disinfection arrangements were as in 1924. Two disinfecting sheds in the Kidderpore Dock and one attached to the Passengers' rest house near Babu Ghat functioned. 27 sea-going vessels, 9 inland steamers, flats and launches and 35 lighters, bhars and dinghis were disinfected; 70 sea-going vessels were fumigated with the Clayton apparatus. The quantity and quality of the municipal filtered water supplied to the shipping was satisfactory and there were no complaints.

The bathing and burning ghats in the port and also the foreshores of the river were in fairly satisfactory condition.

2,027 deck passengers of 71 ships for the Straits were vaccinated and a fee of annas six per head was charged. Nearly 1,000 free vaccinations were done among the floating population of the port.

The port was opened to the Haj pilgrims during the year 1926.

(b) *Port of Bombay.*

64. *Statistics.*—760 vessels of all classes with 141,950 crew and passengers were examined. The clothing and bedding, etc., of 54,045 members of crews and passengers of out-going and in-coming vessels and of vessels lying in the port were disinfected. These included 1,741 members of crew and passengers who had arrived by vessels on which cases of infectious diseases had occurred during the voyage or while in the port. Ten vessels had cases of small-pox, measles, influenza and chicken-pox among their crews and passengers within 12 days before departure from this port.

All pilgrim ships and all vessels which arrived from East African ports between the limits of Durban and Port Sudan were inspected on arrival.

117 incoming vessels with crews aggregating 12,750 persons and 19,945 passengers and pilgrims were inspected, and 27 of them were found to have had cases of infectious diseases (small-pox 4 cases, measles 35, chicken-pox 8, jigger 1, pneumonia 1, mumps 1). Four vessels with 690 pilgrims arrived from Jeddah.

Disinfection.—44 vessels of all classes were disinfected or fumigated, 5 being by Clayton Lane process. The British India Steam Navigation Company fumigated 21 steamers by their own apparatus and by the Port Clayton apparatus. The Port Disinfection Station disinfected 958 bundles of clothes and bedding.

General Health of Shipping.—1,425 persons connected with shipping were admitted into the various hospitals in the city *vide* table attached.

Hospital.	EUROPEANS.		ASIATICS.	
	Admissions.	Deaths.	Admissions.	Deaths.
St. George's Hospital	464	12	...	...
Jamsetjee Jeejeebhoy Hospital . .	...	...	330	35
Gokuldas Tejpal Hospital . . . .	...	...	591	27
Arthur Road and Maratha Hospital .	...	...	40	2
	464	12	961	64

Grand Total . Admissions 1,425, deaths 76.

Pilgrim Traffic.—(a) *Outward.*—The pilgrimage was very small owing to the unsettled conditions prevailing in the Hedjaz. Deratisation of ships prior to embarkation at Bombay was thoroughly carried out. The pilgrims were medically examined and their clothing and bedding disinfected. 1,586 pilgrims sailed in three ships for Jeddah *via* Karachi. 1,675 intending pilgrims were vaccinated before starting. 17 deaths occurred at sea chiefly due to old age, pneumonia, cardiac failure and heat-stroke.

The Quarantine Camp at Kamaran was kept fully staffed by Bombay Government.

(b) *Inward.*—690 pilgrims arrived from Jeddah in 4 vessels which reported 4 deaths from pneumonia and dysentery.

(c) *Port of Karachi.*

65. *Statistics.*—*Outgoing vessels.*—459 outward bound steam vessels were inspected and granted bills of health. Of these 251 proceeded to Aden, the Red Sea ports and Europe and 208 to other ports out of India including the Persian Gulf. 372 country boats were granted bills of health after inspection.

Incoming vessels.—51 steamers and 7 country boats having arrived in quarantine were inspected. Of the 84,281 crews and passengers, 42,538 persons had their clothing, bedding and other articles disinfected. The following were removed to the Epidemic Diseases Hospital, Karachi: 4 cases of small-pox, 15 cases of chicken-pox, 9 cases of measles, and one case of cerebro-spinal fever. 14 deaths occurred from general debility, heart failure, dysentery and pneumonia.

Red Sea Pilgrim Traffic.—Outward.—Three steamers with 782 pilgrims sailed from Karachi for Rebigh *viâ* Aden. Jeddah as port of destination had been ruled out owing to hostilities. The pilgrims were medically inspected and their clothing and bedding disinfected before embarkation. One death from chronic diarrhœa and one from pneumonia were reported.

Inward.—1,670 pilgrims returned to Karachi. Four deaths occurred during the voyage—from dysentery, pneumonia and catarrhal enteritis.

No steamer was fumigated during the year.

(d) *Port of Aden.*

66. *Statistics.*—1,265 vessels and rigged vessels and 959 dhows were granted bills of health. The following cases of infectious diseases were landed from the shipping:—small-pox 10, jigger 3, chicken-pox 7, and enteric fever 3. Three ships carrying 1,736 pilgrims passed through the port. All were medically examined. One death was reported.

(e) *Port of Rangoon.*

67. *Statistics.*—1,433 vessels carrying 133,039 crew and 330,212 passengers arrived. 1,321 sea-going vessels were visited and 516,656 persons were inspected.

Infectious diseases.—43 cases of infectious diseases were reported by the Commanders of 35 vessels, including 9 cases of cholera (on 6 vessels) of which one was landed at other ports, 3 buried at sea, 1 sent to Rangoon mortuary and 4 removed to Contagious Diseases Hospital; 5 cases of small-pox (on 5 vessels), 19 of chicken-pox, 2 of measles, 6 of mumps, 1 of cerebro-spinal meningitis and 1 of typhoid. On the above vessels 12 more infectious cases were detected on medical inspection (small-pox 5 and chicken-pox 7). 17 deaths from non-infectious diseases were reported on 17 vessels.

406 vessels were inspected under the vaccination Act, 1909. On 29 of these 30 cases of infectious diseases were detected as follows:—cholera 1, small-pox 8, chicken-pox 14, measles 3, mumps 2, and cerebro-spinal meningitis 2. As a precaution against the spread of acute pneumonia and influenza, 863 cargo and passenger vessels were inspected and 5 cases of infectious diseases (cholera 1, small-pox 2, chicken-pox 1 and measles 1) were detected and removed to hospitals in Rangoon.

As a result of the visits paid under the Regulations of General Department Notification No. 73 of 1917, the following measures were carried out:—

(1) *Inspections*—255,997 passengers were inspected under vaccination Act, 31,911 under vaccination Act (non-labourers exempted) and 21,901 under influenza notification. A total of 92 cases of infectious diseases were detected, *viz.*, cholera 11, small-pox 20, chicken-pox 43, measles 6, mumps 8, cerebro-spinal meningitis 3, and typhoid 1. Out of 3,159 cases sent for observation, 7 cases of influenza, 2 cases of dengue developed and 14 cases of lepers were detected.

(2) Disinfection of 842 crew, 4,394 passengers and 596 vessels was carried out.

(3) 255,997 labourers and 49,721 crew were inspected for evidences of vaccination protection. Of the former 41,057 and of the latter 5,600 were vaccinated.

(4) *Segregation*.—This can only be imposed on vessels arriving plague infected.

(5) Four riverine vessels reported the occurrence of infectious or suspicious disease (2 for small-pox and 2 suspicious deaths).

(6) 14 vessels underwent disinfection—1 for plague, 3 for cholera, 5 for small-pox, 2 for chicken-pox, 2 for suspicious illness and 1 for a death from suspicious illness.

Infectious diseases diagnosed among the employees of the Port Commissioner's Establishment included cholera 1, chicken-pox 12, mumps 2, typhoid 1, influenza 111, dengue 119 and epidemic dropsy 1.

(f) *Port of Madras.*

68. *Statistics*.—661 incoming vessels arrived from plague infected ports with 61,248 crew and 69,213 passengers; 271 vessels with 26,158 crew and 33,668 passengers were inspected and granted bills of health. 2 cases of small-pox, 4 cases of chicken-pox, 3 cases of measles were found amongst passengers and crew on the steamers that entered the harbour. There was an outbreak of cholera among the European crew on board the steamer S.S. "*Trifles*" with 9 attacks and 2 deaths. The ship was disinfected.

The disinfection of bedding and clothing of deck passengers and crew landing and embarking was continued. A Clayton apparatus was maintained in the port.

69. The mortality from principal diseases in major ports was as in the table below:—

Diseases.	BOMBAY.		CALCUTTA.		MADRAS.		RANGOON.		KARACHI.*	
	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.
Small-pox . . .	570	·45	3,923	3·6	763	1·4	630	1·83	50	·25
Measles . . .	152	·12	67	·06	93	·18	2	·006	131	·65
Plague . . .	174	·13	9	·008	...	...	620	1·79	40	·20
Enteric Fever . . .	156	·12	613	·56	99	·19	44	·13	24	·12
Malaria † . . .	2,918	2·31	2,011	1·9	1,298	2·5	224	·65	...	...
Kala-azar . . .	...	...	823	·76	67	·1	12	·03	...	...
Relapsing fever . . .	2	...	...	...	...	...	...	...	...	...
Influenza . . .	94	·07	551	·51	35	·07	48	·14	12	·06
Cholera . . .	12	...	996	·92	203	·4	60	·17	...	...
Dysentery . . .	705	·56	1,971	1·8	2,279	4·3	† 1,249	3·61	14	·07
Tuberculosis . . .	1,404	1·11	2,586	2·4	1,604	3·0	1,250	3·62	399	1·96
All other causes . . .	25,781	20·45	21,645	20·09	18,556	...	8,234	...	4,927	...
TOTAL .	31,968	25·88	35,195	32·7	25,000	47·3	12,373	35·81	5,597	27·75

* For the year 1925-26.

† Includes intermittent fever

‡ Includes diarrhoea also.

SECTION III.

VACCINATION AGAINST SMALL-POX.

A.—British India.

70. The following table gives details for vaccination throughout British India :—

Province.	TOTAL NUMBER OF VACCINATIONS PERFORMED.		PERCENTAGE OF SUCCESSFUL CASES TO TOTAL VACCINATIONS.		Average cost of each successful case.	*Number of deaths from small- pox.
	Primary.	Re-vacci- nations.	Primary.	Revacci- nations.		
					Rs. A. P.	
Delhi	1924-25	14,244	98.39	74.00	0 5 8	129
	1925-26	16,523	97.80	59.18	0 4 9	130
Bengal Presidency	1924-25	1,655,201	96.30	49.60	0 3 6	5,567
	1925-26	1,751,091	96.20	55.50	0 3 2	17,436
Bihar and Orissa	1924-25	992,011	99.50	59.37	0 2 6	6,932
	1925-26	1,086,138	99.65	70.06	0 2 0	14,382
Assam	1924-25	326,031	95.19	64.36	0 4 4	1,647
	1925-26	347,254	96.69	73.32	0 3 11	2,745
United Provinces of Agra and Oudh.	1924-25	1,243,750	95.21	61.55	0 4 9	2,724
	1925-26	1,304,127	94.01	53.55	0 4 5	9,873
Punjab	1924-25	670,640	98.19	72.52	0 5 4	4,040
	1925-26	747,162	96.54	70.95	0 4 9	7,038
North-West Fron- tier Province.	1924-25	117,907	98.05	90.79	0 2 6	212
	1925-26	154,286	98.48	84.38	0 1 9	586
Central Provinces and Berar.	1924-25	472,934	98.81	57.56	0 6 11	978
	1925-26	492,882	98.24	53.29	0 6 7	3,145
Madras Presidency	1924-25	1,573,032	94.60	44.40	0 5 9	18,810
	1925-26	1,499,278	94.70	37.90	0 6	20,478
Coorg	1924-25	7,035	96.20	63.84	0 7 10	69
	1925-26	7,635	95.99	65.62	0 7 3	26
Bombay Presidency	1924-25	623,265	99.71	47.95	1 1 2	11,152
	1925-26	673,335	99.58	60.52	1 0 10	5,644
Burma	1924-25	537,151	97.76	48.17	0 9 6	2,501
	1925-26	561,266	97.77	42.24	0 9 7	3,852
Ajmer-Merwara	1924-25	15,273	92.00	73.21	0 5 9	619
	1925-26	15,216	91.32	69.99	0 6 8	1,151
TOTAL	1924-25	8,248,474	97.15	55.92	0 5 10	55,380
	1925-26	8,656,193	98.26	54.13	0 5 2	85,986

* The figures in this column are for the calendar years 1924 and 1925.

71. Vaccination operations increased from 10,711,812 (8,248,474 primary and 2,463,338 revaccinations) in 1924-25 to 11,987,640 (8,656,193 primary and 3,331,447 revaccinations). This increase was shared by all provinces except Madras Presidency where the chief retarding factors were said to be emigration, decrease of unprotected children, comparative absence of small-pox, epidemic cholera, incompetence of certain vaccinators and reduction in the vaccinators' minima. Bihar and Orissa, Assam, North-West Frontier Province, Madras and Burma all show an increased percentage of successes, the first leading with 99.65 (99.50 in 1924-25). Revaccination showed a gratifying increase in all provinces, whilst its success rate rose in Bengal, Bihar and Orissa, Assam, Central Provinces and Bombay. The cause of the increase was probably the increased prevalence of small-pox. Small-pox mortality, which increased in every province except Bombay, rose from 55,380 in 1924 to 85,986. The average cost of each successful operation fell in all provinces except Madras and Burma; that in Bombay Presidency is still more than double the cost in any other province except Burma.

72. The table giving the results of vaccinal operations as tested by inspections has been continued:—

Province.	NUMBER INSPECTED.		SUCCESS RATES AFTER INSPECTION BY					
			CIVIL SURGEONS AND ASSISTANT DIRECTORS OF PUBLIC HEALTH.		DEPUTY SUPERINTENDENTS OF VACCINATION.		VACCINATORS, ETC.	
	Primary.	Re-vaccinations.	Primary.	Revaccinations.	Primary.	Re-vaccinations.	Primary.	Re-vaccinations.
Punjab . . .	522,946	216,363	96.23	70.24	96.97	65.72	96.55	70.91
Bombay . . .	218,212	4,428	94.86	81.07	96.11	23.74	89.72	24.64
Madras . . .	1,323,344	370,867	97.2	59.0	94.3	34.8	97.1	51.0
Bihar and Orissa . .	614,377	53,861	98.63	54.50	98.29	66.51	99.43	54.75
Assam . . .	139,147	51,696	91.34	66.17	89.81	57.35	96.71	70.02
Bengal . . .	763,750	305,011	97.8	22.2	96.1	60.2	96.4	61.2
North-West Frontier Province.	114,101	49,540	80.32	75.50	98.48	81.98	98.48	84.38
United Provinces . .	763,019	54,985	94.08	55.01	92.92	49.93	94.01	53.49
Central Provinces . .	311,552	22,010	96.96	55.14	93.97	35.52	98.24	55.80
Burma . . .	348,599	155,550	97.35	51.31	97.42	39.25	97.81	42.21
Coorg . . .	877	1,357	100.00	90.91	99.06	77.71	96.41	64.19
Ajmer-Merwara . .	5,641		97.12		90.10		88.86	

Lymph Vaccine Institutes and the supply of Vaccine

73. *Madras*.—The King Institute, Guindy, continued to supply the glycerine lymph throughout the year. The seed lymph used was carried

over from the last year's stock. The average yield of pulp per calf was 23·52 grammes during the year. Supplies are made to vaccinators regularly four times a month with instructions to utilise the lymph within four days of receipt. Revised instructions for the practice of vaccination have been drawn up and published. Lymph sufficient for 2,076,935 cases was issued to district boards and municipalities and 1,945,276 operations were performed in these areas—a wastage of about 6·3 per cent. The percentage of success obtained by Government vaccinators was 93·6 (91·8 in 1924-25), by local fund vaccinators 94·3 (94·3 in 1924-25) and by municipal vaccinators 98·7 (97·5 in 1924-25). These figures indicate a high degree of success. The Director of Public Health considers it unlikely that much further improvement in this direction will be obtained. The average cost per successful operation was annas six.

74. Bengal.—Lanoline lymph was used in very small quantities in Murshidabad and Mymensingh districts only; it was discontinued by the municipalities in Midnapur and Hooghly districts which were its sole consumers in past years. Primary operations with glycerine lymph, which was in great demand, amounted to 1,748,675 (1,654,352 in 1924-25), those with lanoline lymph to 2,416 operations (849 in 1924-25); the success rate with the former being 96·2 per cent. (96·3 in 1924-25) and with the latter 95·3 per cent. (93·1 in 1924-25). Revaccination operations with each were 1,275,712 and 3,375 with success rates 55·5 (49·6 in 1924-25) and 51·2 per cent. (92·9 in 1924-25), respectively. The total out-put of the vaccine depôt was 2,492,078 grains (2,464,108 grains glycerinated and 13,707 grains lanolinated); of this total 2,477,815 grains were issued to the various local bodies. Owing to the heavy demand from the local bodies on account of the small-pox epidemic, chloroformation of lymph was resorted to as a routine procedure.

75. Bihar and Orissa.—The Namkum Vaccine Depôt (Ranchi) issued 2,881,416 doses of vaccine (2,657,321 in 1924-25). The number of doses manufactured amounted to 4,596,543 (1,602,773 in 1924-25); 4,633,054 doses were held in reserve. Necessary stores and supplies were stocked in ample quantities, and the cold storage plant was duplicated.

Experiments were continued with a view to improving the quality, quantity and purity of the vaccine, and to reducing the cost. Successful purification by the use of ·05 per cent. of iodine in cold storage for 12 months was carried out. The loss of potency in the vaccine was found to be invariably associated with the development of an acid reaction, which developed most quickly in vaccine produced from adult animals. These have been therefore discarded. Several experiments were carried out in the rejuvenation of seed vaccine by the "Naguchi" method and by passage through different species of vaccinifers; that by passage through buffalo calves, children and then cow-calves proved the most effective, and will probably be adopted at the Depôt in future.

The average cost per successful operation fell from Re. 0-2-6 to annas two.

76. Assam.—731,251 capillary tubes were loaded and 718,628 issued. The lymph strain was rejuvenated by passing it through rabbits, another process being also tried by "human vaccinated scale made into paste."

An expenditure of Rs. 14,166 was incurred on the Vaccine Depôt, while Rs. 93,203-9-1 were expended on the whole department. The cost per successful operation fell to Re. 0-3-11.

77. *United Provinces*.—The provincial Bovine Lymph Dépôt at Patwa Dangar had to contend with a severe epidemic of Rinderpest in the area from which calves are drawn, and it killed 139 calves and many grown cattle. This with a breakdown in the cold storage plant placed a heavy strain on expenditure and caused a deficit of Rs. 9,235. 106,028 grammes of glycerine lymph and 3,741 grammes of glycerine paste were produced. Arm-to-arm vaccination has been replaced by calf lymph vaccination in the 48 districts, in 85 of the municipalities and in 41 of the notified areas.

93,056 grammes of glycerine lymph and 4 grammes of glycerine paste, sufficient to vaccinate 2,449,553 persons were issued. 22,741 grammes of glycerine lymph of a strength of 1-3, 6,215 grammes of lymph of strength of 1-5 and 111 grammes of glycerine paste were kept in cold storage for issue in 1926-27. The new rat proof godown was completed; the water supply was satisfactory; and the breakdown in the cold storage plant was temporarily repaired till effective cold weather repairs were possible. The 1st laboratory assistant took out a 3 months course on cattle diseases at Muktesar. The percentage of successful primary vaccinations reported was 92.70 (93.75 in 1924-25), that of revaccinations was 49.04 (58.78 in 1924-25). The Dépôt has evidently had a trying year.

This Institute completed its 2nd decade of usefulness under the same Superintendent.

78. *Punjab*.—56,066 one gramme tubes, equivalent to 3,644,290 doses, were issued during the year. The Java system of lymph production which was adopted as a standard has proved successful. The Director says that maximum potency on this cycle of alternation has now been attained and that the yield is now exactly double. The result is a considerable saving in calves and their maintenance. The average yield of crude lymph from a buffalo calf under the different systems is stated as follows:—

66 grammes	.	.	.	.	(Bamber.)
8	„	.	.	.	(Harvey.)
47	„	.	.	.	(Forster.)
94	„	.	.	.	(Java modification of Forster.)

But the contention that lymph produced by the Java cycle is more resistant to temperature than Forster's lymph (47 grammes) has been found to be incorrect under Punjab conditions.

The Assistant Director of Public Health in charge of the Vaccine Institute inspected 95 clinical tests performed with 23 brews of vaccine lymph. The case and insertion success was 100 per cent. Fresh instructions for the use of vaccine lymph were drawn up and issued. 18 vaccinators and 8 candidate vaccinators were given the usual course of training by the Superintendent.

79. *North-West Frontier Province*.—The lymph used was glycerinated chloroform lymph procured from the Punjab Vaccine Institute. It was reported to be of good quality and gave satisfactory results.

80. *Burma*.—The Meiktila vaccine dépôt issued 1,100,167 doses. The results of 403,911 primary vaccinations and 182,491 revaccinations

reported, showed a success percentage of 98·18 (97·93 last year) and 46·04 (50·02 last year). The depôt has had again great difficulty in obtaining and disposing of calves, and misfortune has attended schemes for their disposal. Help had to be obtained from Guindy Institute, Madras, at a cost of Rs. 2,190. The average cost per successful operation was annas nine and pies seven. 56 apprentice vaccinators were trained at the depôt; 13 public health inspectors received training.

81. *Bombay*.—The vaccine institute, Belgaum, issued 1,215,785 doses of glycerinated lymph. Lymph was also issued to a number of Indian States and to Zanzibar, Aden, Portuguese territory, Persian Gulf and Arabia (106,735 doses); military medical officers were supplied with 30,790 doses. The results of primary vaccinations performed by vaccinators were thoroughly inspected. Clinical testing of the potency of lymph before issue was continued. Strict and careful selection of vesicles on calves at the time of collection of pulp was said to have helped to maintain the quality of lymph at a uniform level. The potency of seed lymph was maintained at a high level by passage through rabbits. Alternate passage of a strain from calf to rabbit and rabbit to calf without waiting for deterioration of lymph was found to be effective. The depôt was again troubled by rinderpest and by difficulty in getting calves at particular times. The water supply was not free from anxiety.

The cost per dose was much higher than in any other province. The usual classes were held; 4 inspectors of sanitation and vaccination were also trained.

82. *Central Provinces*.—The supply and quality of glycerinated lymph prepared at the vaccine institute were reported as satisfactory. 584,090 doses were issued in the province; 57,325 to Indian States and others. The success rate of primary vaccination was 99 per cent., insertion success 91 per cent.; revaccination success rate 60 per cent., insertion success 44 per cent. 10 masters, 16 vaccinators, 3 sanitary inspectors and 1 Assistant Superintendent of vaccination went through the training course successfully. The average cost per successful operation was Re. 0-6-7.

State of Vaccination in Provinces.

Delhi Province.

83. The total operations performed during 1925-26 amounted to 27,301 (16,523 primary and 10,778 revaccinations) as compared with 18,999 (14,244 primary and 4,755 revaccinations) in 1924-25. Though the Chief Medical Officer reports that no difficulty was experienced in carrying out vaccination any where, yet, in 23 villages, very little or no vaccination was done owing to the apathy of the village authorities. 97·50 per cent. of the primary vaccinations were successful. Out of 16,819 infants thought to be available, 16,523 (98·24 per cent.) were vaccinated—a very satisfactory position—as, in the last report, only 65 per cent. were said to have been vaccinated successfully.

Bengal Presidency.

84. The introduction of a free vaccination system and consequent appointment of paid vaccinators by the district boards in place of licensed

ones was the cause of falling off in the number of vaccinators employed in the rural areas. An additional staff of vaccinators was employed both in Calcutta and the rural areas to cope with the small-pox epidemic.

The operations performed in the province numbered 3,030,178 (1,751,091 primary and 1,279,087 revaccinations) against 2,662,966 (1,655,201 primary and 1,007,765 revaccinations) in 1924-25; this represents an increase of 5·8 per cent. and of 26·9 per cent., respectively. Vaccination and revaccination increase was to be expected in face of an epidemic; but the increase was also ascribed to gradual introduction of free vaccination combined with the vigorous activities of the local bodies and effective supervision by the inspecting staff. Vaccination in the tea gardens was greatly improved: 9,194 primary and 15,368 revaccinations were performed as compared with 5,122 primary and 3,505 revaccinations in 1924-25. The operations performed in factories amounted to 25,923 (8,769 primary and 17,154 revaccinations). Railways, steamers and jails were also well tended.

Of 1,162,322, the estimated number of infants available for vaccination in the province, 313,286 or 269·5 per mille were successfully vaccinated, (275·4 per mille in 1924-25). Calcutta showed a rate of protection afforded to infants of 960·7 per mille. 365,304 vaccinations were performed in the province during the non-working season against 199,228 in 1924-25.

The six-point vaccination which is very unpopular with the parents and guardians declined to 115,902 successful operations.

The so called "quinquennial" outbreak of small-pox, which started in December 1924, lasted throughout 1925, and during 1925-26 claimed 18,618 victims (10,443 in 1924-25).

Of the total numbers inspected the successful rate, both in primary operations and in revaccinations, was high in the experience of certain district officers and assistant superintendents, less high with certain municipal inspecting officers. The original report must be consulted for details.

As the vaccination Acts have now been extended practically to the whole of Bengal, maintenance lists of unprotected, prompt and early notification of first cases of small-pox with perhaps a reward, are calculated, in Director of Public Health's opinion—and in this I agree—to go far towards abolishing epidemics. The steady increase in the operations performed is an index of more enlightenment on this question.

Assistant Director of Public Health in his triennial report points out that owing to laxity in the enforcement of the Acts only 270 per mille of the estimated available infants were successfully vaccinated during the year, and he suggests that a special inspector should be placed in every division (there are only 2 at present). Certainly with the transfer of establishment to district boards the onus on them will now increase. I am with him in supporting the necessity for vaccination of contacts, for revaccination, and for offering it "free" wherever possible.

, Bihar and Orissa.

85. Vaccination work throughout the province except in municipalities and the district of Puri where it is done by paid vaccinators, was:

carried out under the licensing system. The number of licensed vaccinators decreased by 16 while that of paid ones increased by 4.

Despite this, the number of vaccination operations increased from 1,044,282 in 1924-25 to 1,297,768. These included 1,277,814 operations (1,084,230 primary and 193,584 revaccinations) performed by vaccinators as against 1,031,146 (990,571 primary and 40,575 revaccinations) in the previous year. The increase is attributed to the more settled political aspect of the country and to the widespread epidemic of small-pox in the province during the last two years.

The percentage of successful operations out of the total number performed during 1925-26 was 93.21 (97.42 in 1924-25).

The forecast made by the Director of Public Health and quoted in my last report proved to be correct, as a serious epidemic of small-pox threatened the province. As primary vaccination has a limited period of protection the Director of Public Health urges—and correctly so—the necessity for making revaccination free and compulsory if epidemics are to be avoided. His remarks can bear repetition and are as follows:—

“ It is well known that vaccination is the best and the only real means of prevention of small-pox and yet vaccination is neither compulsory nor free. There is no doubt but that the cost of vaccination work is a splendid and profitable investment of public funds, which can save many lives and much sickness and suffering. It would, therefore, appear to be wise and proper to organise the work more effectively and to make vaccination compulsory and free, in order to get the whole population protected, and thus abolish a disease, which is of all diseases the most easily and cheaply preventible.”

The year under review saw the extension of the vaccination Acts to the Jharia Mining Settlement in the district of Manbhum.

Out of 1,063,708 children available for vaccination in the province, 356 per 1,000 were vaccinated successfully (346 per 1,000 in 1924-25). In municipalities out of 31,282 children available 570 per mille were successfully vaccinated (433 in 1924-25). A plea is made for raising the age of compulsory vaccination in children from six months to one year.

Assam.

86. The number of vaccinators which increased by two was 434. The average number of persons vaccinated by each vaccinator was 1,013 (878 in 1924-25); but Director of Public Health thinks that—

“ There is no reason why a vaccinator should not perform 1,500 operations in a season. A certain minimum of operations per month should be insisted on and vaccinators failing to work up to that minimum should be dealt with and informed that this fact will be taken into consideration when re-appointing them during the next season. The inspecting staff should check the work of the vaccinators much more closely and see that irregularities are reduced to a minimum.”

The total number of vaccination operations performed was 501,351 (347,254 primary and 154,097 revaccinations) as compared with 418,359 (326,031 primary and 92,328 revaccinations) in 1924-25. The percentage of primary successes was 96·69 (95·19 in 1924-25 and 95·58 in 1923-24) and that of revaccination successes 73·32 per cent. (64·36 in 1924-25 and 59·32 in 1923-24). The success ratio for both primary and revaccinations was 54·57 per mille of population (45·37 in 1924-25 and 41·93 in 1923-24).

Vaccination was made compulsory under Government Notification of 11th May 1925 under the Epidemic Diseases Act, in 14 small-pox infected Mauzas in Sibsagar district, in Golaghat town, and in many other recalcitrant villages in Cachar, Sylhet, Lakhimpur and Sadiya Frontier Tract districts.

The Civil Surgeons, the Assistant Director of Public Health and Assistant Surgeons inspected 4·08 per cent. of the primary and 4·28 per cent. of the revaccinations. The subordinate staff inspected 38·75 per cent. of the primary and 38·80 per cent. of the revaccinations.

Out of 4,358 infants estimated to have been available in municipal towns in which vaccination is compulsory, 1,691 or 38·80 per cent. were successfully vaccinated (44·25 in 1924-25 and 45·72 in 1923-24). During the year in some municipalities, 80 to 90 per cent. of the infants were vaccinated.

52,583 operations (33,243 in 1924-25) are reported to have been performed in the Tea Gardens, 3,190 in jails (2,558 in 1924-25) and 682 in railways (276 in 1924-25).

The Director of Public Health remarks as follows in his report:—

“ It would be easy to check epidemics of small-pox, if the disease was made notifiable in rural areas. It has been found that the reporting of the disease through the agency of *Gaonburas* and *Chowkidars* under the provision of the rules published under Government Notification No. 900-E., dated the 29th February 1924, is defective in as much as reporting is not prompt. The provision of well equipped small-pox hospitals in each municipal town is a crying necessity.”

United Provinces.

87. The district health scheme having been introduced in 16 districts, district medical officers of health instead of civil surgeons are district Superintendents of vaccination in these districts. 888 vaccinators and 49 Assistant Superintendents were employed.

The total number of operations performed in the province during the year was 1,489,304 (1,304,127 primary and 185,177 revaccinations) against 1,318,693 in 1924-25.

The percentage of successful primary vaccinations and revaccinations, in which the results were known were 94·01 and 53·55, respectively (95·21 and 61·55 in 1924-25). The total number of successful primary vaccinations was 1,208,273 (1,169,868 in 1924-25). The districts showing the largest increases are those having district medical officers of health in charge of vaccination, *e.g.*, Ghazipur (6,513), Azamgarh

(4,109), and Gonda (3,806). The fall in the districts of Muttra, Sultanpur and Meerut is accounted for by reduction in the number of, or the appointment of new vaccinators, illness and slackness of others, lack of supervision and increase in revaccinations.

The provincial average of successful vaccinations per 1,000 of population was 28·60 against 26·68 in 1924-25.

The percentage of successful primary vaccinations in proportion to births was higher for all ages than those for the preceding two years, the figures being, respectively, 52·08, 51·66 and 49·57 for children under one year; 24·71, 20·39 and 17·43 for those over one and under six; and 94·01, 74·26 and 68·95 for all age periods.

Municipal vaccinations showed an increase, the figures being 153,097 (111,015 primary and 42,082 revaccinations) and 118,071 in 1924-25. The ratio of persons successfully vaccinated per 1,000 of population was 38·60. The best protected municipalities were, in order, Almora (157·57), Mussoorie (145·17) and Nainital (103·69).

The Cantonments recorded 18,959 operations (6,213 primary and 12,746 revaccinations). The successful primary and revaccinations were 5,246 and 7,377, respectively. The ratio of persons successfully vaccinated per mille of the population was 63·11. In notified areas 16,641 operations (13,076 primary and 3,565 revaccinations) were performed, the successful primary and revaccinations being 11,813 and 1,283, respectively.

Vaccination in "Schools."—Instructions have been issued to vaccinate during the vaccination season all school children who cannot show good vaccination marks, and to revaccinate those over seven years of age. Necessary instructions were also issued to the educational authorities by the Director of Public Instruction. This is a very important step in the right direction and will do much to help forward protection in the areas where it can be enforced. I quote the conclusions of the Director of Public Health:—

“The vaccination state of the school children in these provinces is far from satisfactory and the necessity for vaccination and revaccination of all unprotected or poorly protected school children cannot be too strongly urged, as 40 to 50 per cent. of boys belonging to families who send their children to school apparently evade vaccination during the 1st year of life.”

School authorities are averse from taking action in this direction for fear of a fall in attendance; but Director of Public Health urges that admission to any school aided by public funds should be forbidden unless a certificate of protection against small-pox is tendered by the scholar and that headmasters be made responsible for this. These recommendations, if carried out, must prove useful in protecting school children from small-pox.

The United Provinces vaccination Act is in force in all municipalities, cantonments and notified areas excepting two, and steps are being taken to include them also. Proposals for the extension of the vaccination Act to the rural areas were submitted to Government who have agreed to extend the Act to town areas only for the present. As 17 districts of the province have now been fully staffed with separate

whole-time public health personnel, it is hoped that the efficiency of vaccination will be greatly improved.

There is apparently much delay in reporting or omission to report small-pox out-breaks and this leads to spread of the disease. Government has been addressed in regard to this with a view to bringing it into line with the procedure for cholera and plague.

Punjab.

88. The number of Superintendents of vaccination and vaccinators was 30 and 329, respectively (30 and 306 in 1924-25). The experiment of employing female vaccinators for *purdah* women, which was accepted by Government, made little progress. Four of the seven towns listed for the experiment have agreed but the local authorities are apathetic and it is difficult to find women willing to be trained for the work. It has, however, been arranged to train all lady health visitors, and Director of Public Health thinks that only on them and on lady doctors can reliance be placed.

The operations performed numbered 1,217,375—an increase of 258,863 (76,522 primary and 182,341 revaccinations) over 1924-25. The increase is due partly to the measures taken to increase the efficiency and thoroughness of vaccination operations, partly to the prevalence of small-pox and partly to the co-operation of officers of the education department in the matter of revaccinations in schools. 16,955 house to house operations were performed. In some towns the house to house system has been reported to be impracticable owing to the inadequacy of the staff available.

The percentages of primary and revaccination successes were 36·54 and 70·95, respectively (98·19 and 72·52 in 1924-25). These reduced rates for the year are accounted for because of a return to the discredited practice of starting vaccination operations on the 1st of October when the temperatures are too high and of the great increase of sporadic vaccination on account of the prevailing epidemic during the hot weather. The district staff returned success rates of 96·56 per cent. for primary and 70·57 per cent. for revaccinations (98·25 and 72·93 in 1924-25). The percentage of unknown cases to the total number vaccinated was 6·95 for primary and 19·76 in the case of revaccinations. The district staff recorded a success rate of 42·37 per mille (35·78 in 1924-25). The special staff performed 57,365 operations (35,201 primary and 22,164 revaccinations) with a success percentage of 96·19 for primary and 70·66 for revaccinations.

Cantonments recorded 5,298 primary and 22,938 revaccinations with a percentage success rate of 97·31 and 83·42 against 4,662 and 3,161, respectively, in 1924-25. The railway medical staff reported 1,373 primary and 1,194 revaccinations amongst railway employees, with a percentage of success of 97·44 and 66·52, respectively. Out of 68,259 children available in the province, 56,510 or 83 per cent. were successfully vaccinated, against 78 per cent. in 1924-25; the towns in which the vaccination Act is in force returned a success percentage of 82 (80 in 1924-25), and those where vaccination is not compulsory reported 56 against 68 in 1924-25.

The triennial report shows that a great increase of vaccination has taken place in the province despite the fact that the disease is seldom notified, that small-pox hospitals are practically non-existent, and that systematic segregation and disinfection are never attempted. Director of Public Health has the highest opinion of the value of district medical officers of health in this connection and in this I thoroughly agree with him; his words regarding municipal committees are sad reading.

The vaccination Act was extended to 8 towns during the year. Instances of inoculation are mentioned as having been noted.

North-West Frontier Province.

89. There were six Superintendents of vaccination and 38 vaccinators (34 in 1924-25).

The total number of operations performed in the settled districts and agencies during the year was 227,904 (148,474 last year); the increase is attributed to the prevalence of epidemic small-pox. Each vaccinator vaccinated an average of 5,835 persons. Of the 147,521 successful primary vaccinations, 85,110 were on infants under one year of age and 49,100 on children of one but under six years. The successful vaccinations were at the rate of 61·32 per 1,000 of population. The revaccinations amounted to 73,618 (30,567 in 1924-25). The increase would seem to indicate the growing popularity of revaccinations. In the transfrontier tracts, 36,217 operations were performed (16,937 in 1924-25); and in the cantonments 13,872 vaccinations (3,002 in 1924-25).

The attitude of the people towards vaccination is said to be on the whole satisfactory and a gratifying increase in vaccinations has taken place. The Director of Public Health's remarks in this regard are of much interest and significance. He says:—

“ Whatever the opinion may be in England regarding vaccination, I can safely say that in this province of India and particularly among the uneducated wild frontier tribes vaccination is looked upon as an almost certain prevention against the disease in a severe form and also against disfigurement. In this latter connection, namely disfigurement by small-pox, I have been immensely struck recently by the fact that it is seldom one sees young adolescents with pock-marked faces, whereas 15 years ago 80 per cent. were so afflicted.”

The vaccination Act is only enforced in certain places; but not in Peshawar city, the notified areas of that district, nor in Lakki.

Central Provinces.

90. 36 Assistant Superintendents and 306 vaccinators are reported to be insufficient to cope with the vaccination work of the province; certain district staffs require immediate additions.

A total of 563,432 vaccinations were performed (521,116 in 1924-25). In spite of this steady increase a large number of children still remain unvaccinated. This is ascribed mainly to the slackness of the vaccination staff, whose minimum quota, *viz.*, 1,000 operations, was not per-

formed in several districts. In view of the rural opposition the Director of Public Health again advocates the introduction of compulsory vaccination for which proposals are now under the consideration of Government. 64,244 revaccinations were performed (47,856 in 1924-25). In some districts revaccination is not very popular. The dispensaries and other agencies (including jails) performed 7,491 operations (1,185 primary and 6,306 revaccinations).

The Civil Surgeons inspected 7.64 per cent. of the primary and 4.36 of the revaccinations though, in several districts, the prescribed period of vaccination tour, *i.e.*, 6 weeks, was not maintained. The Assistant Superintendents and others inspected 56.11 per cent. of the primary and 29.90 per cent. of revaccinations. In some districts the touring of Assistant Superintendents was below the prescribed period of 135 days. Assistant Medical Officers in charge of local epidemic dispensaries inspected schools regularly and steps were taken to vaccinate children who were found unvaccinated.

The percentage of success recorded varied between 98.85 by vaccinators and 97.85 by Assistant Superintendents for primary and between 58.96 by vaccinators and 42.33 by Civil Surgeons for revaccinations. Of 41,367 infants available, 31,734 or 77 per cent. were successfully vaccinated (88 per cent. in 1924-25). Lack of supervision and the want of proper facilities are the causes of this decrease (*e.g.*, Jubbulpore). Director of Public Health thinks that the situation is not satisfactory and sums it up thus:—

“ On account of less work during the last year, the balance of unprotected children has accumulated, but as the continuance of such a large balance of unprotected children is dangerous, the need for taking prompt action to get the balance cleared off is urgently called for. At present small-pox is already gaining ground in many places and it is feared that the disease may assume endemic proportions. I hope the municipal committees will take energetic action to work off the balance of unprotected children as early as possible.”

The Director further complains that the municipal committees continue to be apathetic and indifferent to any advice or report on the unsatisfactory work given to them, and in this respect he mentions Akola district particularly. This is hardly creditable.

In order to provide for the compulsory and immediate reporting of the occurrence of small-pox cases in municipal towns, temporary regulations (The Small-pox Prevention Regulations, 1925) were issued. The scheme for the training in vaccination of school-masters in Berar was sanctioned and some teachers have been trained. It is hoped that the scheme will meet a need.

Madras Presidency.

91. 1,965,026 vaccination operations were performed (2,033,997 in 1924-25). This decrease was thought to be accounted for by such factors as emigration, the cholera epidemic, cessation of lymph supply in March, reduction in the number of unprotected children, incompetence of certain vaccinators, comparative absence of small-pox and reduction

in vaccinators. The persistence of local bodies in not filling up temporary vacancies is also in no small measure responsible for this decrease.

The success rate for primary vaccinations was 94·7 as against 94·6 in 1924-25, 90·0 in 1923-24, 79·2 in 1922-23 and 78·6 in 1921-22 and that for revaccinations 37·9 against 44·4; the reduction in the latter was due to the varying degrees of immunity met with in the individuals concerned. The higher success rates for primary vaccinations are ascribed to the adoption of glycerine lymph and to increased supervision. Amongst the rural circles, the Nilgiris district returned a success rate (both primary and revaccinations) of 110·5 per mille of population; the rates for other districts varied from 25·2 in South Arcot to 38·2 in Salem and 39·4 in the Agency. An increase of 11,936 successful vaccinations in children under one year of age was recorded in districts, excluding municipalities, against 79,557 in 1924-25.

The vaccination operations performed in 81 municipalities fell from 239,430 in 1924-25 to 183,196 in 1925-26. The towns which have returned success rates below 35 per mille are those without health officers. The recorded percentage of successful infantile vaccinations to total births ranged from 24·8 to 99·2.

Though the figures for the last four years encourage the hope that small-pox is one of the preventible diseases which is gradually being brought under control in this Presidency and though individual effort counts for much the Director of Public Health thinks that three other conditions are of fundamental importance:—

- (a) the extension of compulsory vaccination throughout the Presidency and enforcement of the small-pox rules and regulations,
- (b) the maintenance of correct records of births and of unprotected persons, and
- (c) the prompt notification of small-pox cases.

In an analysis of 66 out-breaks of small-pox in Anantapur district in 1925, it was found that in 54 the first case was an unvaccinated one, while in the other 12 the persons attacked first had been vaccinated in infancy but had not been subsequently revaccinated.

In the triennial report for the period ending 1925-26, the Director of Public Health mentions the following salient features:—

- (a) The inauguration of a complete district health scheme; the appointment of health officers in a large number of municipalities by which facilities have been given for epidemiological studies, for improved preventive measures, and for increased supervision;
- (b) The substitution of lanoline lymph by glycerine lymph;
- (c) The increase in the success rate (95 per cent. in 1925-26);
- (d) The increase in vaccinations;
- (e) The progressive increase in the rate of infantile vaccinations; and
- (f) The steady decline in small-pox mortality.

There is, however, still room for improvement and for continuous effort; for, as in other provinces, large numbers of unprotected children are added yearly to the population.

Bombay Presidency.

92. The local boards continued to exercise control over vaccination in one district of each Registration circle. The vaccination of the civil population in the Belgaum Cantonment was transferred to the Public Health Department and that of Karachi town from the Assistant Director of Public Health to the Karachi municipality. Establishment strength changed from time to time in accordance with epidemic requirements. In some of the "Inspector" vacancies, medical men with sanitary inspectors' qualifications are being tried.

673,235 persons were primarily vaccinated (623,209 in 1924-25) and 135,996 persons were revaccinated (114,231 in 1924-25). The percentage of successful primary cases, in which the results were checked was 99.58 (99.71 in 1924-25). The percentage of unknown primary cases for the Presidency, excluding Aden, was 10.07 against 9.53 in the previous year, while for Aden it was 91.50 against 92.75. In Aden extensive house to house inspection and vaccination work were carried out vigorously. The success rate of primary vaccinations, as ascertained by the Assistant Directors of Public Health, was 94.86, and by inspectors 96.11. The results of primary vaccinations performed by the vaccinators were thoroughly inspected. Vaccination campaigns were conducted in mills and schools. Vaccinators were directed to push on primary and revaccinations in and around the fair centres well in advance of the festivals. It is gratifying to note that all fair centres escaped infection.

A temporary establishment at Karachi entertained for the vaccination of pilgrims proceeding to Hedjaz performed 2,803 revaccinations at a total cost of Rs. 622.

The compulsory vaccination Act has been extended to Ahmednagar and Belgaum cantonments and Dhulia town: the Act is now in force in 15 towns. Opposition to vaccination exists in some of the towns in Sind and the removal of the Act has been applied for.

A circular, requiring all revenue officials, zamindars and other respectable persons to help in the cause of vaccination, was issued in Thar and Parkar district; a proposal was also submitted to maintain vaccination registers in the villages to enable the revenue officials to inspect them and to see the amount of work done by the vaccinators. The Director of Public Health thinks that this procedure, if extended to other districts, would be of great value. With this I agree.

Burma.

93. The Director of Public Health, Burma, in his triennial report ending 1925-26, says:—

"Universal vaccination and revaccination, so that all persons are vaccinated at least twice in their lives, would practically abolish small-pox from the province, thus preventing thousands of deaths annually, to say nothing of saving many from permanent blindness and disfigurement.".....
 "It is gratifying, however, to note that the importance of vaccination and the prevention of inoculation is being

recognised and that, led by the district councils of Tharrawaddy and Thayetmyo, most district councils have adopted the vaccination Acts which have now been extended to all districts in Lower Burma, with the exception of the Hill districts of Arakan, Kyaukpyu, Sandoway and Salween districts." This is very pleasant reading.

In Upper Burma, only 4 of the districts and the Shan states have been brought under the vaccination Act. The Burma Prohibition of Inoculation and Licensing of Vaccinator's Act has also been extended to all districts in the province with a few exceptions. There is still abundant room for advance.

The total operations performed numbered 758,785 (561,266 primary and 288,861 revaccinations) as against 816,767 (537,151 primary and 279,616 revaccinations) in 1924-25. The percentages of successful cases in which results were known were 97.77 for primary (97.76 in 1924-25), and 42.24 for revaccinations (48.17 in 1924-25). 47.73 was the ratio of successful vaccinations per 1,000 of population, as compared with 46.62 in 1924-25. The vaccination staff of the Corporation of Rangoon vaccinated 41,169 labourers, against 30,202 in the previous year. The 63 towns in which the vaccination Act is in force recorded 112,755 operations (154,754 in 1924-25). Of these 46,565 were primary and 66,190 revaccinations, the percentage success in primary cases being 98.60 and in revaccinations 46.88. 24,200 children under one year of age were available for vaccination, whilst 28,412 infants were vaccinated or 4,212 infants in excess of those available—due to defective registration, to carelessness in the upkeep of vaccination registers and to immigration from rural to urban areas. The jail department performed 31,063 operations (1,282 primary and 29,781 revaccinations). Of the primary cases 84.79 per cent. were successful and of revaccinations 51.94 per cent.

The district health staff inspected 10.81 per cent. of the primary cases and 6.76 of revaccinations. Inspectors of vaccination and other inspecting officers inspected 49.95 per cent. of vaccinations (52.92 per cent. in 1924-25).

Andamans.

94. 1,691 cases were vaccinated during the year—284 primary and 1,407 revaccinations. Of the primary cases, 231 and of the revaccinations 1,060 proved successful.

Vaccination among troops.

95. Particulars of vaccination in the Army will be found in Statement III of the Appendix to this Section (page xxxii).

Compulsory Vaccination.

96. The following table shows the number of towns in each province, in which the vaccination Act was in force, and the increase or decrease as compared with the previous year.

PROVINCE.	Number of towns in which Vaccination Act was in force.	Increase or decrease.
Delhi Province	1 (Delhi city)	...
Bengal Presidency	110	—6
Bihar and Orissa	58	+1
Assam	23	...
United Provinces of Agra and Oudh	85	...
Punjab	106	+5
North-West Frontier Province	9	...
Central Provinces and Berar	72	...
Madras Presidency	81	+1
Coorg	2	...
Bombay Presidency	15	+3
Burma	63	+1
Ajmer-Merwara	...	...
	625	+5

B.—Vaccination in Indian States.*

97. *Bihar and Orissa.*—In the Indian States in Bihar and Orissa, the number of operations about which we have reports amounted to 456,251 (178,698 primary and 277,553 revaccinations) as against 529,357 (197,162 primary and 332,195 revaccinations) in 1924-25.

98. *Punjab.*—The vaccinations performed in the large Punjab States, which employ their own vaccinators are tabulated below.

States.	VACCINATION OPERATIONS.		PERCENTAGE SUCCESS.	
	Primary.	Revaccinations.	Primary.	Revaccinations.
Patiala	53,015	31,701	99.37	82.08
Bahawalpur	22,265	734	99.39	88.42
Kapurthala	4,145	887	60.19	36.53
Jind	7,991	264	97.73	100.00
Faridkot	4,044	255	99.09	89.81
Nabha	818	...	85.14	...

* Figures for Indian States have been introduced for the first time in this report. They cannot be taken as exhaustive; but indicate, in so far as returns have been available, the trend of vaccination work in some of the larger Indian States.

99. *Bombay Presidency*.—In the Indian States for which reports have been received 74,783 persons were primarily vaccinated (76,577 in 1924-25). The percentage success of cases in which the results were definitely ascertained was 99·77 (99·74 in 1924-25). Revaccinations numbered 6,315 (4,966 in 1924-25). The success rate, excluding unknown cases, was 65·35 (64·81 in 1924-25). The rate of unknown results was 10·70 per cent.

100. *Mysore State*.—The number of operations totalled 171,322 (145,689 primary and 25,633 revaccinations) as compared with 153,720 (135,101 primary and 18,619 revaccinations) in 1924. 73·08 per cent. of the total vaccinations were performed by the district vaccination staff; 23·98 per cent. by the special staff in municipalities and 2·94 per cent. by medical subordinates in dispensaries. The number and percentage of successful primary cases in which results were known were 124,497 and 83·84, respectively, against 114,749 and 91·99 in the previous year and those of successful revaccinations 10,902 and 48·53 against 6,682 and 41·95, respectively, in 1924. The number of persons successfully vaccinated per mille of population was 26·73 (20·72 in 1924). 36·39 per cent. of the children under one year of age were protected against 34·5 per cent. in the preceding year.

Vaccination is compulsory, as a permanent measure, in all municipalities and in the local area under the control of the Kolar Gold Fields Sanitary Board. Proposals were submitted for making vaccination compulsory in selected rural areas in three of the districts.

101. *Hyderabad State (Deccan)* (6th October 1924 to 5th October 1925).—131 vaccinators were employed.

119,929 vaccinations (119,180 primary and 749 revaccinations) were performed as compared with 112,421 in the previous year. The Director, Medical and Sanitation Departments remarks:—

“It is hoped that when the rules for compulsory vaccination have been legally passed and enforced the staff will be able to show better results.”

91·97 per cent. primary and 61·14 per cent. revaccinations were successful. The cost per successful vaccination was 6 annas and 9½ pies. Quality of the lymph prepared at the vaccine depôt in Hyderabad City was said to be good. 178,275 tubes were prepared and 128,865 were issued to district vaccinators. Of 71 students who received training in vaccination at the vaccine depôt 49 passed. Minor improvements in the matter of preparation and preservation of lymph were effected. The installation of a cold storage plant was under consideration. The machine for grinding lymph on hygienic principles was adjusted and brought into use.

SECTION IV.

PUBLIC HEALTH WORKS.

102. *General.*—The following tables show increase or decrease of income, as compared with the previous year, and expenditure on public health charges, including conservancy, water supplies and drainage, in the municipalities of different provinces in British India during the year 1924-25 :—

NOTE.—The sanitation charges are not strictly uniform in all provinces and are, therefore, not quite comparable provincially.

TABLE A.

Provinces.	Income.	Percentage expenditure on public health, 1924-25 1923-24	Conservancy.	Water supply.	Drainage.
Delhi Province*	—	{ $\frac{55.22}{23.96}$ }	++	++	—+
Bengal Presidency	—	{ $\frac{52.86}{54.57}$ }	—	+	—
Bihar and Orissa	+	{ $\frac{33.47}{31.50}$ }	+	—	+
Assam	+	{ $\frac{39.32}{39.55}$ }	—	+	+
United Provinces of Agra and Oudh.	+	{ $\frac{39.0}{41.99}$ }	+	—	+
Punjab	—	{ $\frac{44.40}{51.24}$ }	+	—	—
North-West Frontier Province	+	{ $\frac{25.82}{19.50}$ }	+	+	+
Central Provinces and Berar	+	{ $\frac{39.30}{34.0}$ }	+	+	+
Nadras Presidency	+	{ $\frac{32.40}{61.80}$ }	+	—	—
Bombay „	+	{ $\frac{36.61}{37.79}$ }	+	+	+
Burma	+	{ $\frac{29.92}{14.80}$ }	+	+	+

* For 1924-25 and 1925-26.

† For Delhi Municipality and Notified Area

TABLE B.
(Showing Provincial Expenditure on Public Health in Municipalities).

Provinces.	TOTAL INCOME.		TOTAL EXPENDITURE ON PUBLIC HEALTH.		EXPENDITURE ON PUBLIC HEALTH PER CENT. OF THE TOTAL INCOME.			EXPENDITURE DURING 1924-25 ON		
	1923-24.	1924-25.	1923-24.	1924-25.	1923-24.	1924-25.	1924-25.	Conservancy.	Water-supply.	Drainage.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Delhi Province *	25,99,917	24,89,945	6,02,571†	13,74,949	Not available.	55.22	4,95,560	4,01,031	4,95,560	3,52,423
Bengal Presidency	83,28,730	79,65,135	45,44,466	42,10,206	54.57	53.86	11,21,949	19,50,229	11,21,949	4,78,626
Assam	10,41,891	10,91,609	4,12,051	4,29,203	39.54	33.47	1,39,239	2,30,449	1,39,239	20,257
Bihar and Orissa	45,66,453	48,25,387	14,40,874	16,14,982	31.55	39.32	2,96,831	10,25,314	2,96,831	2,04,703
United Provinces	1,43,36,959	1,48,92,873	60,19,521	58,02,718	41.99	39.0	20,99,842	23,47,283	20,99,842	7,96,513
Punjab	1,24,33,590	1,12,49,236	63,70,988	49,94,836	51.24	44.40	17,23,495	15,46,208	17,23,495	6,49,650
North-West Frontier Province	30,02,572	38,92,817	5,72,041	8,76,190	19.50	25.82	4,93,189	2,38,873	4,93,189	61,680
Central Provinces	58,51,792	58,70,935	20,12,072	23,07,562	34.0	39.30	6,61,700	11,51,163	6,61,700	1,97,595
Madras Presidency	48,14,896	99,21,871	29,74,926	32,14,392	61.80	32.40	3,60,753	3,38,240	3,60,753	3,11,310
Bombay Presidency	1,94,97,750	2,22,85,289	73,68,346	81,58,769	37.79	36.61	29,72,112	31,75,500	29,72,112	11,10,047
Burma	2,33,05,559	2,37,73,906	32,77,120	49,72,735	14.60	20.92	21,80,257	24,68,542	21,80,257	3,93,475
TOTAL	9,97,80,109	10,77,56,903	3,55,94,976	3,79,56,542	35.66	35.23	1,25,44,427	1,48,73,837	1,25,44,427	45,76,279

* Relates to 1924-25 and 1925-36.

† Includes Delhi Municipality and Notified Area Committee only.

Provinces.

103. Certain outstanding facts and figures are mentioned in dealing with each province; but it must be realised that reference should be made to the sanitary works section of the individual provincial reports for fuller details of the work being done and of the organisation which is attempting to carry it out.

Delhi Province.

104. The total income of the municipalities in Delhi Province amounted to Rs. 24,89,945 during the year 1925-26, as compared with Rs. 25,99,917 in 1924-25. The expenditure on sanitation, including Rs. 4,01,031 spent on conservancy, Rs. 4,95,560 on water-supply and Rs. 3,52,423 on drainage, was Rs. 13,74,949 during the year under report.

Systematic action was urged by the Medical Officer of Health, Delhi Municipality, to improve the open drains in the city which were defective, and the sewers in the old city which were unsatisfactory. The removal of night soil, house refuse and city sweepings was carried out in the city either by the municipal bullock dépôt or by contract system; but a better method was under consideration. The city water-supply, which is controlled by a water board, is from a Patterson plant and the quality was good.

The district board had no income; but spent Rs. 4,141 on the sinking of wells and the digging of tanks and drains.

Bengal Presidency.

105. Excluding Calcutta there were 115 municipalities in Bengal with total population of 2,006,545. In these municipalities 20 health officers and 96 sanitary inspectors were employed. The previous remarks of the Director of Public Health regarding the laxity in enforcing the provisions of the Births and Deaths Registration Act, the Vaccination Act and the Food Adulteration Act still apply though signs of improvement are evident in a few municipalities.

The total income, excluding the opening balance (Rs. 16,16,271) and bad debts (Rs. 10,21,975), amounted to Rs. 79,65,135 (Rs. 83,28,730 in 1923-24). The expenditure on sanitation (*viz.*, Rs. 73,05,253) included Rs. 19,50,229 on conservancy, Rs. 11,21,949 on water-supply and Rs. 4,78,626 on drainage.

The expenditure on sanitary works by Government, municipalities and district boards during 1924-25 amounted in aggregate to Rs. 33,51,595 (Rs. 28,54,742 in 1923-24). The most important items of this expenditure were—part of Dacca sewerage scheme and cost of acquiring land for drainage works Rs. 5,32,744; Comilla water-works Rs. 2,93,000; Titaghar sewerage scheme Rs. 2,50,000; Suri water-works scheme Rs. 1,60,400; and Bankura water-works (improvement and extension) Rs. 49,596.

There were 26 district boards in the Presidency, each of which (excluding Darjeeling) was provided with a qualified health officer and a number of trained sanitary inspectors. In addition to their public health duties they were actively engaged in the suppression of small-

pox and cholera epidemics and in the control of kala-azar and malaria. Three lakhs of rupees were provided for the rural public health organisation in the Presidency; but for details of the district work the provincial report should be consulted.

The total income of district boards, excluding opening balances and debts, amounted to Rs. 1,22,08,951 (Rs. 1,16,72,500 in 1923-24); 8 per cent. of the income was spent on water-supply; 14.8 per cent. or about 8 pies a head was available for medical relief, vaccination and sanitation.

Assam.

106. In the province there were 17 municipal boards and 8 small towns. The aggregate income, including the opening balances, amounted to Rs. 10,91,609 (Rs. 10,41,891 in 1924) while the expenditure on public health was Rs. 4,29,203—an increase of Rs. 17,152 over the previous year. This expenditure included Rs. 2,30,449 on conservancy, Rs. 1,39,239 on water-supply and Rs. 20,257 on drainage. The Shillong municipality was the cause of this increase under water-supply. The percentage of expenditure on public health in municipalities and small towns varied between 55.96 (the highest in Gauhati) and 6.75 (the lowest in Nazira town).

No important sanitary works were carried out in the Surma and Assam Valley divisions; but a good sanitary type of private latrine is said to be an urgent necessity. In Shillong the segregation hospital was reconstructed and water-supply and drains were improved; at Kohima sanitary inspections of the town and Assam Rifles lines were carried out, and certain inexpensive anti-malarial measures were recommended. The Public Works Department incurred an expenditure of Rs. 23,945 on the maintenance of water-supply and drainage and on town improvement against Rs. 7,744 in 1924.

A Government grant of Rs. 3,00,000 was made to local boards for the improvement of their rural water-supplies and they spent Rs. 70,244 on the construction and repairs of tanks and wells.

Public Health Board, etc.—One meeting of this board was held during the year. It was then recommended that schemes for rural water-supply should be submitted to expert advice, that the work, while in progress, should be open to expert inspection, that, when tanks were proposed, small inexpensive platforms should be constructed which should have some form of protective fencing and raised banks to prevent surface overflow. Meetings of the Health Board (Epidemics) were held as necessary to consider epidemic and other public health measures.

Bihar and Orissa.

107. The total receipts, including opening balances, and the expenditure on sanitation for the 48 municipalities, amounted to Rs. 48,25,387 and Rs. 16,14,982 (33.4 per cent. of the total) respectively. This expenditure included Rs. 10,25,314 for conservancy, Rs. 2,04,703 for drainage and Rs. 2,96,831 for water-supply. The total receipts, including opening balances, and the expenditure on sanitation for the 19 district boards were Rs. 1,80,58,713 and Rs. 5,70,362, respectively.

Sanitation in villages is at present confined to village unions, whose membership is small, and whose revenues are too meagre for them to carry out any serviceable sanitary programme. Further they are said to be unwilling to tax themselves, though the appointment of health officers is a statutory obligation on district boards unless exempted therefrom. The scheme of health organisation for district boards is at present working in five districts only.

United Provinces.

108. The aggregate income of the municipalities and their expenditure on sanitation amounted to Rs. 1,48,92,873 and Rs. 58,02,718, respectively. Conservancy absorbed Rs. 23,47,283, water-supply Rs. 20,99,342 and drainage Rs. 7,96,513.

Rs. 19,92,695 were spent on sanitary works executed under the Superintending Engineer, Public Health Department. These included Rs. 4,63,972 on water-works (original and special repairs), Rs. 13,49,917 on water-works maintenance, Rs. 1,67,438 on drainage works and Rs. 11,368 on other works. Projects to the value of Rs. 19,34,044 were finally sanctioned; those to the value of Rs. 58,54,346 were submitted but not sanctioned, and schemes involving an approximate expenditure of Rs. 85,95,577 were under preparation.

Boards varied much in their appreciation of the necessities in the matter of sound plant, regular supply and prevention of waste. As examples of different aspects of this, the Boards of Allahabad and Benares may be cited.

Water-supply.—With a view to increasing the number of protected water-supplies in rural areas, a note was drawn up and was approved by the Board of Public Health. This gives details of the hand pumps to be installed in village wells of various depths, of the protection required to prevent contamination and of their maintenance. In most cases the boards have given attention to obtaining increased income, and to reducing the waste of water. The plants at Agra, Benares, Cawnpore, Dehra Dun, Fyzabad, Gola Gokaran Nath, Lucknow, Meerut, Mirzapur, Mussoorie and Nainital were well maintained. The administration of the water-works at Allahabad was still unsatisfactory; and the pumping plant had to be overhauled. The plant at Jhansi has been allowed to fall into bad repair—the water supplied being quite inadequate; nor was that at Muttra well maintained. There has been much activity in sinking tube wells. A tube well was completed at Kosi at a cost of Rs. 20,278; another was commenced at Allahabad as a permanent supply for the Magh Mela pilgrims. The tube well at Gola Gokaran Nath was test pumped and that at Khusrobagh was cleared of sand. An experimental strainerless tube well has been sunk in Unao. The Agra Radhaswami tube well has not yet been completed. More projects were under consideration for Jaunpur, Benares and Hathras.

The more important water projects completed were those at Fyzabad (Rs. 9.94 lakhs), Gola Gokaran Nath (1.60 lakhs), Dehra Dun Baldi Spring (2.37 lakhs), Haldwani (2.27 lakhs), Mussoorie (2.50 lakhs) and Moradabad (1.99 lakhs). Construction work regarding the Allahabad water-supply improvement (Rs. 37.58 lakhs), Benares water-supply extension (Rs. 6.47 lakhs), Hardwar water extension and electric supply

scheme (Rs. 4.69 lakhs) has been commenced and should prove of great use and benefit at future fairs. Mussoorie electric power extension scheme (estimate Rs. 10.73 lakhs) was sanctioned. The Furrukhabad flushing scheme (Rs. 1.03 lakhs) and the Jhansi water improvement scheme (Rs. 23.17 lakhs) were under consideration.

Drainage.—This work still remains the least popular of all public improvements, Cawnpore being the only place possessing a fairly adequate system. No board is reported to have insisted on property owners providing house drains and appliances in their property. The pumps for sewage disposal at Lucknow cost Rs. 10.54 lakhs and worked satisfactorily. The pumping station for sewage disposal and pipe-laying work at Muttra at a cost Rs. 1.83 lakhs has been completed.

The following table shows what is being done in the larger municipalities in regard to water-supply and drainage flushing:—

Municipality.	Gallons per head consumed daily.	Miles of drains flushed daily.	NUMBER OF SAMPLES ANALYSED.			REMARKS.
			Chemical.	Bacteriological.	Total.	
Benares . . .	31	Over 97 miles .	117	620	737	
Lucknow . . .	19.3	„ 204 „ .	4	233	237	
Cawnpore . . .	30.9	„ 126 „ .	22	1,057	1,079	
Agra . . .	24.6	„ 77 „ .	8	390	508*	* Includes 110 samples for Bacillus coli.
Allahabad . .	22	Not available .	8	554	562	
Mirzapur . . .	15.7	20 miles .	8	8	16	
Muttra . . .	22.5	171,413 feet .	6	246	252	
Meerut . . .	12.9	188,218 „ .	8	396	404	
Dehra-Dun . .	6.1	About 9 miles .	3	...	79†	† Includes 9 tests for bacillus coli; 29 for lactose fermenter and 38 for colony count.
Mussoorie . .	22.2	Over 5 miles .	4	...	133‡	‡ Includes 48 for colony count and 85 for lactose fermenter.
Nainital . . .	6.5	6,840 feet .	4	156	160	

Board of Public Health.—This board which met seven times during the year had at its disposal Rs. 9,61,420 for expenditure on sanitary works. Grants aggregating Rs. 4,71,429 were sanctioned leaving a balance of Rs. 4,89,991 on the 31st December 1925. These included Rs. 1,12,720 for urban water-supplies and Rs. 59,550 for drainage and sewerage works. Loans to the value of Rs. 7,97,000 were sanctioned by Government. Projects at an estimated aggregate expenditure of

Rs. 84,25,913 were administratively or financially approved, and included Rs. 40,13,488 for water-supply schemes, and Rs. 41,34,920 for drainage and sewerage works. Two projects were sanctioned or recommended by the Public Health Department Engineer—the sewerage scheme of Meerut and the water-supply scheme of Fatehpur Sikri. The plant at Meerut was said to require renewal. The question of installation of the mechanical filtration plant at Agra was under consideration.

A note by the Director of Public Health explaining the plan of model village houses, etc., and the advantages in adopting them was circulated. It was decided that in future grants for hand pumped well supplies in the rural areas should be given only to those district boards who would undertake to keep pumps in good order and to instal them in suitable compact areas, especially in pilgrim centres and on pilgrim routes.

Punjab.

109. The municipalities (104) which increased by one had an aggregate income of Rs. 1,12,49,236, excluding the opening balance of Rs. 38,44,499 and Rs. 26,09,342 under the heads “extraordinary” and “debts.” Of the expenditure on public health and vaccination which was Rs. 49,94,836, water-supply absorbed Rs. 17,23,495, conservancy Rs. 15,46,208 and drainage Rs. 6,49,650. 1,412·73 acres of land were under sewage irrigation in the chief towns in the province. 10,184 wells for drinking water were cleaned and 258 parapets were constructed at a total cost of Rs. 28,971. The income from the sale of manure and street sweepings in municipal towns amounted to Rs. 2,51,305.

The income of the district boards, excluding the opening balance, amounted to Rs. 1,43,22,837 and the expenditure on sanitation and vaccination to Rs. 2,21,310. It is reported that many district boards do not realise their responsibilities or their duty in regard to sanitary works. Many works in the districts of Hissar, Rohtak, Gurgaon, Kangra, Gurdaspur, Lahore, Gujranwala, Rawalpindi, Shahpur and Multan, were constructed and paid for privately. Under the supervision of the Sanitary Engineer 15 borings were done during the year; the average number of sanitary schemes under execution was 19; 8 new schemes being commenced and 7 being completed. Preliminary and final projects to the value of Rs. 53,34,647 and Rs. 2,21,959, respectively, were prepared.

Sanitary Board.—Three meetings of this board were held, grants amounting to Rs. 4,20,871 being sanctioned. These were mainly for Multan water-supply scheme (Rs. 3,14,268) and Sialkot water-supply extension scheme (Rs. 90,000). During the year a fresh grant of Rs. 6,95,500 was placed at the disposal of the board, and from this, grants amounting to Rs. 5,10,349 were made up to 31st December 1925. The main items included in this were Rawalpindi water-supply extension scheme (Rs. 2,00,000) and Ludhiana drainage scheme (Rs. 1,20,947).

North-West Frontier Province.

110. The total income and the expenditure on sanitary works and conservancy charges of the municipalities and notified area committees

amounted to Rs. 33,92,817 and Rs. 8,76,190, respectively; Rs. 2,38,878 being spent on conservancy, Rs. 4,93,189 on water-supply and Rs. 61,680 on drainage. The district boards with an income of Rs. 9,57,696 spent Rs. 48,155 on sanitation (Rs. 3,929 on conservancy and Rs. 1,487 on water-supply). Government gave a grant-in-aid to local bodies of Rs. 30,000 which included Rs. 18,333 for sanitary improvement in Dera Ismail Khan.

Central Provinces.

111. The total income of municipal towns, exclusive of loans and balances, was Rs. 58,70,935, 39 per cent. of which was spent for public health purposes. Water-supply absorbed Rs. 6,61,700, conservancy Rs. 11,51,163 and drainage Rs. 1,97,595. The municipalities were reported to have displayed reasonable activity in sanitation and taken steps to carry out the ordinary improvements. The municipalities at Akot, Akola, Jalgaon and Drug were said to be apathetic and indifferent and most of them to have much leeway to make up. The grants made by Government to municipalities totalled Rs. 2,11,548, the main items being Shegaon water-supply scheme (Rs. 1,03,000) and Jubbulpore drainage scheme (Rs. 50,000).

Water-supplies.—The Jubbulpore supply to the city and cantonment was both adequate and satisfactory. The construction of the head-works of the Shegaon water-works was in progress; the total expenditure incurred during the year under report was Rs. 1,50,000.

Drainage.—Further investigations regarding Murwara drainage scheme were in progress. A supplementary estimate amounting to Rs. 4,708 in connection with the Itarsi drainage scheme was sanctioned for house connection drains, etc. This work has been practically completed.

Village sanitation.—The provisions of the Village Sanitation Act are in force in 114 villages in the province. The total receipts and expenditure of these villages amounted to Rs. 3,57,534 and Rs. 3,53,875, respectively; the latter included Rs. 1,073 spent on water-supply and Rs. 17,801 on drainage. A grant of Rs. 10,000 was sanctioned for the improvement of water-supplies in rural areas in Merar.

Board of Public Health.—The board held one meeting (special) during the year. In addition to the proposal for the disposal of land remaining out of the University site at Indora, the following subjects were dealt with:—(1) Water-supply scheme at Shegaon, (2) Revised proposals for town extension in Katol (Nagpur district), (3) Revised proposals for the allotment of bungalow sites in the civil station at Chhindwara, (4) Scheme for the provision of additional building sites on the old parade ground in the civil station at Ellichpur, (5) Proposals of the Khandwa municipality for a grant to cover the cost of three town extension schemes, *viz.*, Bashir mill scheme, clerks' quarters' scheme and the poor men's quarters' scheme.

Madras Presidency.

112. The number of municipalities remained unchanged; the income of these and expenditure on sanitation amounted to Rs. 99,21,871 and

Rs. 32,14,392, respectively. Conservancy absorbed Rs. 3,38,240, water supply Rs. 3,60,753 and drainage Rs. 3,11,310. In most municipalities the conservancy plant is said to be defective and of a very primitive type and provision for repairs and renewals is said to appear seldom in budget allotments. The transport of nightsoil in open and leaky carts is a common offence punishable under the District Municipalities Act, and is partly responsible for the prevalence of preventible diseases in those areas. Only 38 per cent. of the houses are provided with latrines and as a result very insanitary conditions prevail in most of the municipal towns. 30 out of 81 municipalities and one out of 548 unions are provided with protected water-supplies.

Rural sanitation.—With one exception (a small installation in a festival centre in Kurnool district) no progress appears to have been made in the introduction of protected water-supplies or drainage schemes. Government allotted varying grants to local bodies for the improvement of rural water-supplies and village roads. Conservancy arrangements exist in most of the villages included in the 494 unions in the Presidency. The aggregate expenditure incurred by local bodies on public health administration was Rs. 16,11,388—Rs. 66,416 on conservancy, Rs. 24,930 on drainage and Rs. 1,82,965 on water-supply. Most local boards allot small grants in their annual budgets but these are often not spent to the best advantage.

Bombay Presidency.

113. The number of municipalities (excluding Bombay city) was reduced to 155 with a population of 2,671,161. Their aggregate income amounted to Rs. 2,22,83,289, of which Rs. 1,46,12,348 (or just over 65 per cent.) was raised by taxation. The aggregate expenditure of these municipalities on sanitation amounted to Rs. 81,58,769 including Rs. 31,76,500 spent on conservancy, Rs. 29,72,112 on water-supply and Rs. 11,10,047 on drainage. The expenditure on public health measures came to Rs. 10 per head of population in Karachi city and averaged Rs. 2-7-0 for all remaining municipalities.

As a result of the systematic touring of the Assistant Directors of Public Health, municipalities are showing signs of awakening interest in the sanitary condition of their towns and there is a greater demand for the advice of the Public Health Department; this is as it should be and is encouraging. Complete sanitary surveys were made by the Assistant Directors of Public Health in 63 towns, while advice in sanitary matters was given in 42 more. Many of the municipalities took action in matters of conservancy, water-supply, the prevention of spread of epidemics and in measures of more general nature. Four of the municipalities distributed quinine free of charge; in five, congestion and overcrowding were dealt with by acquisition of houses and by widening the municipal roads. The municipality of Broach has attached hand-pumps and electric motors with cisterns to public wells. Hyderabad spent Rs. 24,000 on the construction of new drains. The Nasik system of trenching night-soil is working satisfactorily in 11 towns in Gujarat.

The municipalities of Karachi, Hyderabad, Ahmedabad, Surat, Poona and Sholapur possess qualified medical officers of health. No town im-

provement schemes for which Government grants were given were completed during the year. In some of the districts, steps have been taken to acquire lands for the extension of village sites.

District and Taluka Local Boards.—Of the aggregate income of the 27 district local boards and 222 taluka local boards which amounted to Rs. 1,70,93,779, Rs. 7,25,094 were spent on public health works. Rs. 18,42,000 were distributed amongst Commissioners for expenditure on roads and bridges, and a grant-in-aid of Rs. 1,09,221 was sanctioned for the improvement of village water-supplies. These grants which were supplemented by allotments from local funds and private contributions were expended on constructing wells, tanks, troughs and cisterns, in repairing old wells and closing step-wells and in boring operations. 690 draw-wells were constructed. 22 step-wells were converted into draw-wells.

Notified Areas.—The total income of the 21 Notified Area committees (including opening balance) amounted to Rs. 3,99,610 and the expenditure to Rs. 3,10,134. With a few minor exceptions no works of importance were carried out during the year.

Sanitary Committees and Village Panchayats.—599 sanitary committees and village panchayats worked during the year. Their income (including opening balance) and expenditure amounted to Rs. 8,99,987 and Rs. 5,01,123, respectively. Popular contributions reached Rs. 1,83,340. Several of these bodies spent money on improvement of their water-supplies. A village sanitary board exists at Siddapur in Kanara district.

Sanitary Board.—Only one meeting of the board was held, the following subjects being dealt with:—

- (1) Defects in the filters at Hubli.
- (2) Recommendation for a grant-in-aid of 50 per cent. of the cost for the drainage scheme for Sholapur.
- (3) Recommendation for a grant-in-aid of 50 per cent. of the cost of the drainage scheme for the town of Dhulia.
- (4) Approval of the proposals for the improvement of water-supply and partial surface drainage of Surat at an approximate cost of Rs. 3 lakhs.
- (5) Recommendation of the scheme for water-supply to Alandi;—net cost being Rs. 65,050.
- (6) Recommendation for a grant-in-aid of 50 per cent. of the cost of the scheme for water-supply to the town of Gokak, cost being Rs. 2,26,903.
- (7) Recommendation for a grant-in-aid for the Ahmednagar water-supply scheme.
- (8) Proposal for a contribution from Government towards leave provision for health staff in Sholapur municipality.

The local bodies are obviously evincing a growing interest in sanitary improvements.

Burma.

114. The total amount spent on civil sanitary works was Rs. 54,37,132 of which 20·96 per cent. was in towns and 5·78 per cent. in districts. Of the total income of Rs. 3,17,66,558, conservancy absorbed 6·01 per cent., water-supply 5·87 per cent. and drainage 42 per cent. The total income of towns in the Federated Shan States was Rs. 1,73,578 of which 32·51 per cent. was spent on sanitary works; the corresponding figure for the rural areas being 87 per cent.

Water-supplies.—A tube well in Bassein municipality was near completion. A grant of Rs. 16,988 was sanctioned for the Insein water-supply. The water-supply schemes of Toungoo and Tavoy towns were dropped owing to the adverse attitude of the municipal committees. Estimates amounting to Rs. 2,66,283 and Rs. 2,02,989 for improvements in the Maymyo water-supply and Magwe water-supply project were forwarded.

Sewerage and Sewage disposal.—41 estimates amounting to Rs. 15,56,056 were prepared and forwarded; important amongst them being a house sanitation and sewerage scheme for the Mingaladon Cantonment (Rs. 9,00,947) and a sewerage, water-supply and sanitation scheme for Government House, Rangoon (Rs. 1,14,527).

Conservancy.—The contract conservancy system is inefficient. Some of the municipal bodies have terminated this practice. There is a tendency to substitute motor lorries for animal transport in the removal of rubbish. The Director of Public Health says that the towns in Burma are slow to realise the great advantage of day removal of excreta.

Public Health and other Boards.—The board met 5 times during the year. 39 projects were considered and Rs. 3,21,650-8-0 allocated. The Projects Sub-Committee considered a draft revision of Public Works Department Circular No. 13 of 1913 regarding procedure to be adopted by local bodies when applying for grants for public health projects. The Director of Public Health's proposal to undertake legislation with a view to giving powers to local bodies to enforce revaccination was considered by the board and agreed to. Draft model building bye-laws framed under the municipal Act were also considered. A sum of Rs. 6,25,000 allotted in the Public Health Department budget for 1925-26 was at the disposal of the board for contribution to local bodies for public health purposes.

SECTION V.

LABORATORIES AND MEDICAL RESEARCH.

Central Research Institute, Kasauli.

115. Lieutenant-Colonel W. F. Harvey, C.I.E., I.M.S., the Director of the institute proceeded on combined leave pending retirement from the 4th June 1926. Captain K. R. K. Iyengar, I.M.S., officiated as Director from the 4th to the 23rd June 1926 when Lieutenant-Colonel S. R. Christophers, C.I.E., O.B.E., F.R.S., I.M.S., took over charge of the Institute and continued to the end of the year. Captain K. R. K. Iyengar, I.M.S., Majors J. A. Sinton, O.B.E., I.M.S., and L. A. P. Anderson, I.M.S., officiated as Assistant Directors. Captains C. deC. Martin and A. C. Craighead, Major G. Covell, I.M.S., and Dr. V. T. Korke were attached to the Institute as supernumerary officers.

The annual report of the Director does not enter into great detail regarding the work done; but relies on the published papers for purposes of reference.

Major Sinton was placed on short deputation to visit all provincial headquarters throughout India with a view to collecting material for a complete bibliography of malaria. Dr. V. T. Korke continued the helminthological inquiry in Bihar and Orissa. Lieutenant-Colonel S. R. Christophers attended the Medical Research Workers' Conference at Calcutta and Major L. A. P. Anderson, I.M.S., the Indian Science Congress at Benares.

The Malaria and Entomological Sections were directed by Major Sinton in addition to his duties as Officer-in-Charge, Quinine and Malaria Inquiry.

Instruction.—Five medical officers were afforded facilities to acquaint themselves with laboratory methods and bacteriological technique, etc., and a compounder of the Mandi State hospital was instructed in media making. An instructional class in malariology which lasted for a month was held at Kasauli and was attended by 4 Indian Medical service and 5 civil medical officers.

In addition to the usual routine work connected with the supply of cultures, etc., for serological work, the manufacture and issue of prophylactic and curative vaccines and antisera was continued. The institute also continued to distribute imported sera, to examine specimens microscopically and bacteriologically, to supply scientific stores and to publish research work. The following quantities of vaccines and antisera were issued during the year:—

Vaccines—

Prophylactic Cholera vaccine	691,369·5 c.cs.
T. A. B. vaccine	318,402·5 c.cs.
Influenza vaccine	33,807 c.cs.
Curative vaccines	12,359 c.ca
Autogenous vaccines	for 59 cases.

Anti-sera—

Antivenomous serum	96,040	c.cs.
Normal horse serum	3,620	c.cs.
High Titre agglutinating sera	731	c.cs.

Antitetanic, antidiphtheritic, antistreptococcus, antidysenteric, antimeningococcus and antianthrax sera were, as usual, imported from England and issued on demand.

847 specimens of pathological material, etc., including 387 bloods for Wassermann test, 82 for Widal's test, 182 for other examinations and 137 tumours were examined and reported on.

Scientific apparatus and chemicals, etc., were supplied on payment to civil and military medical officers and private practitioners; but it is evident that there is now less need for this service than there was before or during the Great War.

Research Work.—Twenty-four papers published in the Indian Journal of Medical Research during the year indicate the problems dealt with by the various members of the staff. These are detailed in the Appendix to this Section (Appendix to Section V of Volume I, page xxxv).

The Director continued to hold editorial charge of the Indian Journal of Medical Research throughout the year—an exacting appointment which, though very necessary, made large demand on his spare time.

School of Tropical Medicine and Hygiene, Calcutta.

116. This great tropical teaching and research institution, largely the creation of Sir Leonard Rogers assisted by the late Sir Pardey Lukis, Director General, Indian Medical Service, has during the short period of its existence not only justified the hopes of its founders but also commenced to exert a far-reaching influence on the medical profession throughout the north of the Peninsula. In the last annual report the Director in a historical note has traced the origin and set forth the aims of this institution, and a series of sectional reports by individual professors deal exhaustively with the work that is being done. Lieutenant-Colonel J. W. D. Megaw, C.I.E., V.H.S., I.M.S., continues his able direction of its activities assisted by Major Baptist.

The school is divided into five sections each with its own staff. These are the Tropical Medicine Section, the Institute of Hygiene, the Pasteur Institute, the Leonard Rogers Laboratories, and the Carmichael Hospital for Tropical Medicine. In the Tropical Medicine Section there are seven professors, two lecturers, seven assistant professors and one chemist; in the Institute of Hygiene six professors, one lecturer, seven assistants; at the Pasteur Institute one superintendent and one assistant superintendent; at the Hospital, one officer-in-charge, one resident medical officer, one registrar and two house physicians; whilst at the Research Laboratories there is a research staff consisting of 30 officers.

As the work of the Pasteur Institute has been published in a separate annual report it has been specially referred to subsequently in this chapter in connection with the other Pasteur Institutes in India (page 127).

The Director in his report* has drawn up a very useful summary of the chief investigations carried out by the school since it was opened and this should be consulted for details, though it may not be amiss to mention here that much work has been done on such subjects as kala-azar, hookworm, intestinal infections, leprosy, filariasis, diabetes, bacteriology, pathology, protozoology, pharmacology, entomology, serology, chemistry, hygiene and tropical medicine. During the year under review additional work has also been done on radiology, skin diseases, blood changes, indigenous drugs, malaria and epidemic dropsy.

This is a great record of work. The report is one of the most interesting medical reports emanating from India and should be carefully read by all interested in the development of tropical medicine in the East.

Haffkine Institute, Bombay.

117. As a mark of recognition of the meritorious services of Dr. Haffkine in connection with plague and its prevention the Bombay Bacteriological Laboratory was designated as "The Haffkine Institute". As a large volume of work is recorded in the annual report of the Director I have dealt with it in some detail.

The permanent Director, Lieutenant-Colonel F. P. Mackie, O.B.E., M.D., I.M.S., proceeded on leave from 11th April 1925 and Captain R. H. Malone, M.D., I.M.S., officiated from the 11th April to the 19th June 1925 and Major J. Morison, M.B., D.P.H., I.M.S., from the 20th June to the close of the year. Drs. S. N. Gore and K. S. Mhaskar were the Assistant Directors throughout the year.

Dr. Margaret Balfour, C.B.E., Dr. Agnes Murphy, W.M.S., Dr. N. H. Fairley and Dr. B. P. B. Naidu worked at the Institute as special research officers.

Plague Vaccine.—The fact that, in spite of the decrease in plague throughout India, the demand for Haffkine's plague prophylactic continued, went to indicate that the vaccine was gaining in popularity. The output of this vaccine was over ten lakhs of doses (1,027,071 doses as compared with 1,489,734 in 1924). Of this 1,016,542 doses were distributed in British India and 10,529 in countries outside India. In accordance with the seasonal incidence of plague the largest issues were made during January, February and March and the smallest in June. The investigation of methods for improving this vaccine was continued (*vide* detailed note).

The examination of rats for plague on behalf of the municipal health department was continued; thus enabling the municipal health department to get timely warning of possible outbreaks. Of 642,370 rats examined 2,318 or 0.73 were found plague infected. An excellent table in the printed annual report of the Institute gives full details of these examinations which are the most extensive of their kind, so far as

* Annual report of the Calcutta School of Tropical Medicine, Institute of Hygiene and the Carmichael Hospital for Tropical Diseases, 1926. Also a brief history of the School and a report for the years 1920-25, published by the Bengal Government Press, Calcutta.

I know, throughout the world. It is interesting in passing to note that of the 2,318 infected rats found, 2,152 were *rattus nowegicus* and only 166 *rattus rattus*.

The Pharmacological Unit concentrated on indigenous drugs, *e.g.* :—

- (a) "The seeds of *Holarrhena antidysenterica* yielded 3 per cent. of a semi-drying oil which contained 12.2 per cent. of ricinoleic acid and the alkaloid conessine (0.25 per cent.). The bark is said to contain 22 per cent. alkaloid conessine and 9.56 per cent. of a gum whose chemical and physical properties are being determined. 41 cases of dysentery were treated with these seeds and 24 improved, while 75 cases were treated with the bark and 59 improved. The oil extracted from the seeds acts beneficially on the symptoms of dysentery. The antidiarrhoeal properties of this plant are not inherent in one chemical constituent in particular but in a combination of two or more.
- (b) The anthelmintic action of *Butea frondosa* was found to be associated with the alcohol-soluble portion of the residue.
- (c) Extracts from the leaves of *Gymnema sylvestre* were mostly resinous and their nature difficult to determine.
- (d) The leaves of *Nyctanthes arbor-tristis*, in doses of 20-60 grains, reduced the temperature to normal in 19 cases of malaria treated (Mhaskar).
- (e) Of 1,937 prisoners examined in the Umarchadi Jail hookworms were present in 46.6 per cent., roundworms in 30.6 per cent. and whipworms in 67.8 per cent."

The Biochemical Section was investigating sprue early in the year in collaboration with Dr. Hamilton Fairley. I again quote the Director in his report—

"Sprue seems to be primarily an inflammatory process involving a part or whole of the alimentary tract from the mouth to the rectum. The most notable changes are the well known erosions on the tongue and the less familiar erosions in the small intestines. On the former there is thinning of the epithelial surface and a superficial invasion of the epithelial surface with yeast mycelia, but, as this is unaccompanied by cellular reaction under the corium, it is not considered to have any etiological significance" "There seems to be no doubt that sprue is a distinct clinical entity and that in its typical form it is more widespread than is generally recognised."

A series of cases was studied by the fractional test meal method and many cases were treated and from these it was deduced that delayed emptying of the stomach and hypoacidity or actual achlorhydria was present in more than 50 per cent. The majority of sprue cases are said to develop anæmia, if the disease is at all far advanced. As the investigation is detailed and technical the annual report* of the Director should be further consulted and if necessary supplemented by the reports in the Indian Journal of Medical Research.

Major Sokhey joined the unit as officer in charge after a long and suitable training in Europe and America as a Rockefeller scholar. Soon after this the study of the chemical aspects of the growth of the plague bacillus in both media together with methods of buffering of media were taken up.

This unit is now fully equipped and is able to undertake any of the more complex analyses of blood, urine and expired air necessary to modern medicine.

* Report of the Haffkine Institute for 1925. (Price As. 15 or 1s. 7d.), Bombay Government Central Press.

The Antirabic Section continued to develop. Through the institute 4,381 persons were treated, 625 of these being at the institute in Bombay (British Army 2, Indian Army 1, European civilians 40, Indian civilians 582). Of the 625 cases aforesaid 1 died within 15 days and 5 died 15 days or more after the completion of treatment—the latter showing a failure rate of '96 per cent. The dog was the biting animal in the case of 572 persons, jackal in 26, cat in 18, monkey in 7 and fox in 2. Among the out-centre cases 4 died during treatment, 6 within 15 days of treatment and 18 more than 15 days after the completion of treatment. The intravenous method of treatment was reserved for cases severely bitten by animals proved to be rabid by a positive Negri examination or judged to be rabid by their behaviour. Six such cases, none of which contracted hydrophobia, were treated during the year. Of 125 dogs' brains from Bombay city or suburbs 3 were unfit for examination, 43 showed no evidence of rabies, 79 showed positive Negri bodies; of 104 dogs' brains received from out-stations 67 were diagnosed as rabid.

33 samples of water were examined bacteriologically and 115 samples chemically; but the Director very pertinently questions the value of any of these results to the senders in view of the methods of transit, etc.; and suggests that dangerous water should be chlorinated and the results controlled by bacteriological tests. With this I am in agreement.

Research Work.—(a) Researches on methods for improving the anti-plague vaccine have been continued by Dr. Naidu and Dr. C. R. Avari—

“(a) 0.003 milligrams of the spleen of rat killed by plague were used. This dose was found sufficient to kill 95 per cent. of rats subjected to it. On the other hand, in rats protected by a dose (0.5 c.c.) of Haffkine's prophylactic, the average mortality fell to 62 per cent. The methods used to insure a high standard of vaccine are as follows:—The broth from which the vaccine is made is prepared by digesting goats flesh with hydrochloric acid and neutralising the product with caustic soda. The procedure is carefully controlled and the resulting broths are, as nearly as possible, uniform. The germ used is derived from a case of plague in man and is of such a virulence that it will kill a rat in four days”. “Experiments have shown that the vaccine is at its best when used within six months of its manufacture but is hardly less efficient during the following six months and is still potent up to 18 months from the date of its manufacture. Bouillon made from caesin gave a vaccine of high protective value and its use is under consideration.

(b) Several attempts by workers of high reputation have been made to render plague vaccine less toxic and of greater immunising value by mixing it with immune plague sera. At this institute, sensitised vaccines have been prepared by treating the growth from an agar culture of the plague bacillus with antiplague sera derived from rabbits and sheep and a horse serum received from the Pasteur Institute, Paris. The use of these sensitized vaccines on rats has shown that they are not superior to a control series treated with unsensitized vaccine, nor to a series treated with Haffkine's prophylactic.

(c) The use of *Mercurochrome* was suggested for the treatment of plague by Dr. Andrew Balfour. It is said that this drug in a dilution of 1 in 3,200 will kill the plague bacillus in 15 minutes. Rats weighing from 70 to 100 grammes apparently stand doses up to 10 milligrammes but doses of 15 and 20 milligrammes are lethal.”

The details of this investigation are embodied in a paper by Dr. Naidu which has been published in the *Indian Journal of Medical Research*.

(d) The investigation into the transmission of plague by *X. Cheopis* and *X. astia* was continued. Up till December successful transmissions were few, possibly owing to the unfavourable season; the experiments were begun during September and October, and, though 24 out of 30 had to be abandoned, the remaining 6 were negative to both *astia* and *cheopis*.

(e) Dr. Hamilton Fairley continued his study of the pathology of *Schistosomum spindalis*.

This small parasite was first discovered in the mesenteric vessels of two cows (*Bos indicus*) at Muktesar in 1906. Lieutenant-Colonel W. Glen Liston and Dr. M. B. Soparkar in 1918, when investigating the possibilities of the spread of human schistosomiasis in India, found fork-tailed cercaria in one of the fresh water molluscs,—*Planorbis exustus*—met with in Bombay. They transmitted infection to guineapigs successfully. Their observations were elaborated by Dr. Hamilton Fairley who has embodied his results in an exhaustive paper in the Indian Journal of Medical Research (Volume XIV, No. 3, January 1927).

His work shows that from the stand point of comparative pathology *S. spindalis*, which is found in goats and cattle in India, is closely allied to *S. mansoni*, the cause of human intestinal schistosomiasis in Africa, and *S. japonicum*, the schistosomiasis found in the far east.

(f) The work on intestinal bacteria, chiefly relating to the production of indole, H_2S , and nitrites was continued by Dr. S. N. Gore. He has observed that *B. pestis* is one of the few gram negative achromogenic aerobic bacilli which give a positive nitrite reaction.

(g) An inquiry into the causes of maternal and infant mortality in India and financed by the Indian Research Fund Association was commenced under Dr. Margaret Balfour, C.B.E., assisted by Dr. Agnes Murphy. In Bombay, an important cause of maternal mortality was found to be a severe anæmia during the last five months of pregnancy. Deficiency in diet is thought to play its part, inasmuch as the effects of a deficient diet become serious under the added strain of pregnancy. Evidence is being collected to elucidate this.

(h) Dr. A. D. Mihailova Emanuelov studied in detail two new yeasts which she had isolated from mineral springs at Essentuki, a health resort in the Caucasus mountains. These were described at the meeting of the Indian Science Congress and named *Saccharomyces essentukiensis* and *S. aureus essentukiensis*.

(i) Miss M. M. Mehta, D.Sc., undertook an examination of the blood groups amongst the Parsis of Bombay in order to throw light on the origins of the different sections of the race.

(j) Assistance was rendered to the customs authorities in the fumigation of imported cotton against the Boll weevil and of plants by means of Hydrocyanic acid gas.

The papers published will be found in the Appendix to this Section (Appendix to Section V, Volume I, page xxxv).

King Institute of Preventive Medicine, Madras.

118. Dr. D. A. Turkhud, M.B., C.M. (Edin.), acted as Director throughout the year. Dr. C. G. Pandit, officiated as Assistant Director and was in charge of the Vaccine Lymph section. The report is for 1925-26.

Vaccine lymph.—The lymph issued is glycerined. Full details of its manufacture will be found in Section III, relating to vaccination, paragraph 70 *et seq.*, but a very interesting and informative note on vaccine lymph has been written up in the Director's report* and should be consulted.

Bacterial Vaccines.—85,569 doses of bacterial vaccines were issued (105,497 in 1924-25), the decrease being attributed to a smaller demand for cholera vaccine.

Excluding those (3,555) done by the investigation units, 15,180 specimens were examined during the year.

The institute continued to purchase, store and distribute the various kinds of antisera required for the medical institutions of the Presidency including those for the Veterinary Department. 6,764 ampoules of these were distributed.

Public Health Section.—Samples of all protected water supplies are taken and examined twice a year in addition to the samples submitted or called for under special circumstances. 1,009 water examinations were made.

Investigation Units.—The number of these very valuable units was raised to three. Malarial surveys were made of (1) Metur labour camp, (2) Vizagapatam, (3) Simhachallam (situated on the top of a hill two miles north-west of Vizagapatam) and (4) Mopad area. It is a pity that such units are not in evidence in other areas as they are of great utility and they do much to make the value of the laboratory known throughout the province.

Research Work.—The following research work was done during the year :—

- (a) *Inter-relation of viruses of the vaccinia group.*—Dr. C. G. Pandit has been investigating the relationship of the viruses of contagious epithelioma of fowls to the viruses of vaccinia and variola. After passages on suitable animals he has been able to produce a strain apparently identical with vaccinia from the virus of contagious epithelioma. The strain thus obtained is of considerable potency. The experiments are being continued.
- (b) *Streptococci in puerperal fever.*—Streptococci were isolated from many uterine and vaginal swabs taken from cases of puerperal fever at the Government hospital for women and children, Madras. These Streptococci have been typed according to Holman's classification.
- (c) *Relapsing fever.*—The strains of Colonel Cunningham's relapsing fever spirochaetes were kept alive by doing frequent "squirrel" passages.
- (d) *Dysentery in the Madras Penitentiary.*—A microscopic examination was made by one of the investigation units, of the

* Report of the King Institute of Preventive Medicine for the year ending March 31st, 1926.

stools of all inmates of this jail for the detection of cases of latent dysentery, as evidenced by the presence of mucus, etc.

- (e) *Piroplasmosis gibsoni* in hounds.—The occurrence of this disease in hounds was investigated under the Indian Research Fund Association. The work continues.

The papers published during the year 1925 will be found in the Appendix to this Section (Appendix to Section V, Volume I, page xxxv).

Educational and Propaganda Work.—The usual courses for vaccinators were held while special classes for malariology and for vaccine lymph manufacture were also arranged.

Pasteur Institute of India, Kasauli.

119. Major H. H. King, I.M.S., was in charge of the Institute until November 5th, from which date Lieutenant-Colonel J. Cunningham, I.M.S., continued to the end of the year.

The outstanding feature was an extension of the policy of decentralization of antirabic treatment by the opening of two additional subsidiary centres at Lahore and Rawalpindi; the former to meet the needs of the civil population and the latter for military use alone. The number of cases treated at Kasauli and its ancillary centres was 8,623 (Kasauli 6,465, Lahore 1,880, Rawalpindi 229 and Allahabad 49), *i.e.*, 771 in excess of that in 1924.

Dead carbolised vaccins (1 per cent. strength) was used. 129 deaths were recorded at Kasauli and its centres—death rate of 1.50 per cent. Failures numbered 82 or .95 per cent.

Dogs were responsible for 83.05 per cent. of all bites inflicted and jackals for 13.38 per cent. 25 wolf bites were also treated.

424 brains were examined for the presence of Negri bodies at Kasauli and 51 at Lahore. For full details of the work done at this—the parent Pasteur Institute—the printed report should be consulted.

Research.—The investigation into the effect of heat on antirabic vaccine (carbolised) was completed during the year and the results were published in the April 1926 number of Indian Journal of Medical Research. Investigations are now being undertaken at the institute under the auspices of the Indian Research Fund Association on work recently done at certain Pasteur Institutes in Europe and which points to the possibility of some improvement in our methods of antirabic treatment. A fuller note on this will, however, be possible in my annual report for 1926.

Pasteur Institute of Southern India, Coonoor.

120. Lieutenant-Colonel J. W. Cornwall, M.D., I.M.S., the Director, proceeded on leave preparatory to retirement on the 28th January 1925; Lieutenant-Colonel T. H. Gloster, I.M.S., acted as Director during the rest of the year.

The number of patients treated increased from 489 in 1924-25 to 572 in 1925-26. Out of the 572 patients, Coimbatore accounted for 335. One patient died during treatment, two died less than and four

more than 15 days after completion of treatment. 155 persons received advice but no treatment. The failure rate was '69. 4,072 patients were treated at local centres; among these 3 died during treatment, 9 less than and 16 more than 15 days after completion of treatment, the percentage of failures being '39. It is of interest to note that 69 per cent. of these out-door cases received a complete course, 7 per cent. did not, and 24 per cent. are unknown owing to faulty returns.

Over 98 per cent. of patients receiving a full course of treatment at the local centres were able to be followed up three months or more after completion of treatment. In the Madras Presidency as a whole, 269 deaths are reported to have occurred from rabies among patients treated at the institute during the years 1913—1924, whereas 3,195 deaths during the same period from this cause are estimated among untreated persons. Statistics for over a number of years show that one out of 36 persons treated with antirabic vaccine, as against one out of 16 among the untreated patients, died of rabies. During the year under review (1925-26) the percentage of failures (3'57) among the Europeans and Eurasians was about seven times higher than that ('55) among the Asiatics.

Dogs were responsible for 541 cases, cats for 9, monkeys for 8, jackals for 6, donkeys for 4, men for 2 and cheetahs for 1 out of the 572 patients bitten. 193 specimens sent or brought to the institute were examined for rabies, 129 being found positive.

The virus was in its 973rd passage on February 28th, 1926.

Research work.—The papers dealing with research work done at the institute, and published in the Indian Journal of Medical Research, are detailed in the Appendix to this Section (Appendix to Section V, Volume I, page xxxv).

King Edward VII Memorial Pasteur Institute, Shillong.

121. Lieutenant-Colonel E. C. Hodgson, D.S.O., I.M.S., was the Director throughout the year.

1,176 persons (including 60 Europeans) completed the treatment as against 1,831 in 1924 and 2,371 in 1923. Nine patients absconded and 16 discontinued treatment. One death from hydrophobia occurred during treatment in a woman who arrived three weeks after a severe dog bite. The decrease is due to the reduced numbers from Bengal (42 cases).

The mortality from hydrophobia was 11; 4 died more than 15 days after completing treatment. The total hydrophobia rate was '94 per cent. and the failure rate was '34 per cent. No Europeans developed hydrophobia. 13·9 per cent. of the cases were bitten by jackals—the hydrophobia rate being 1·82 per cent. as compared with '82 per cent. for dog bites. 203 or 14·7 per cent. did not come for antirabic treatment. The dog was the biting animal in 980 persons, jackal in 165, horse in 15, cat in 10 and monkey in 2.

Bacteriological, Clinical and Research Section.—3,056 examinations were made (2,530 in 1924).

Research work.—(a) The curative value in rabies of the new organic preparations of antimony was disproved by investigation.

(b) An effort was made to discover a blood test for incipient hydrophobia and evidence was obtained of changes occurring in the blood, which may be proved to be of value after a thorough test on a large number of cases.

(c) The work in the kala-azar hospital concentrated on treatment with various drugs:—

- (i) A tincture and infusion made from a tree, *Vitex pedunculata*, which grows in Assam and is believed to have cured numerous cases of kala-azar, were tried and found to have no curative properties.
- (ii) Glucoside stibamine, a drug prepared by Messrs. Burroughs Wellcome & Co., was found to be able to cure kala-azar cases very rapidly.
- (iii) The drug known as 471 Von Heyden, or stibosan, proved equally as efficient as urea stibamine.
- (iv) Further research work was carried out with various salts of antimony but they did not prove so successful as the ordinary soloids of sodium antimony tartrate or in any way to be compared with urea stibamine.
- (v) A study of antimony-fast cases was continued. By antimony-fast is meant cases in which, although maximum doses of the various inorganic and organic preparations of antimony, which have been found most effective, have been given over weeks and months, yet the patients still retain living kala-azar parasites in their blood and eventually die. Since 1923 five such cases have been reported at this institute. Sodium antimony tartrate, urea stibamine, stibosan and glucoside stibamine (dosage varying from 10 to 20 grammes) were tried but living parasites were found in their spleens during the course of treatment. Further studies on this type of case are being carried out.

Vaccine Section.—The following amounts of vaccines were issued during the year:—

Influenza vaccine	. . . . .	14,270 c.cs.
Cholera vaccine	. . . . .	103,930 c.cs.
T. A. B. vaccine	. . . . .	2,296 c.cs.

Burma Pasteur Institute and Bacteriological Laboratory.

122. Lieutenant-Colonel J. Taylor, D.S.O., I.M.S., was the Director throughout the year. Major C. DeC. Martin, M.B., I.M.S., joined as Assistant Director from the 17th July 1925.

1,092 patients (a 40 per cent. increase) were treated, 901 of whom went through the full course. One patient died during treatment; 45 discontinued treatment; 145 voluntarily abandoned treatment. Three treated patients died of hydrophobia. The statistics of the years 1920-21 to 1925-26 show that the mortality from bites on the head is 12 times as great as on other parts of the body unprotected by clothing and 21 times as great as on parts so covered.

The death rate (22 per cent.) amongst persons undergoing a full course of treatment was the lowest ever recorded at this institute.

Out of the 901 persons, who completed treatment, 170 (18·8 per cent.) were bitten or licked by animals which were proved to be rabid by laboratory tests or classified as such by veterinary officers. The dog was the cause of infection in 1,076 cases, horse in 8, cat in 3, human being in 3, and monkey in 1.

772 reports upon the health of patients three months after the completion of treatment were received. The health was reported good but there were two deaths from hydrophobia.

24 dogs were kept under observation. 15 died of which 13 showed signs of rabies. The brains of 138 animals were examined and reported on; 84 were found by microscopical examination to be rabid.

The fixed virus was in its 535th passage on 31st March 1926.

Bacteriological Section.—4,551 routine examinations were carried out; 210 autogenous vaccines were prepared; 2,412 doses were issued (1,702 in 1924-25). The curative sera were stocked and supplied. The institute has now undertaken to stock and supply such sera as may be required in future. Issues of cholera and influenza vaccines on behalf of the Director of Public Health were continued. As the Medical Store Dépôt continued to send microscopes and spare parts for overhauling, cleaning and oiling, 22 microscopes and 6 oil immersion lenses were dealt with. 387 samples of calf lymph (53 in 1924-25) from the Vaccine Dépôt, Meiktila, were submitted to examination for estimation of their bacterial content. The supply of apparatus and media for the collection of pathological material for examination was continued. A pamphlet describing the methods of collecting and sending specimens to the laboratory was issued.

Research Section.—(a) *Antirabic Vaccine.*—The experiments on the keeping properties of the carbolised anti-rabic vaccine were completed. It was proved that the vaccine remains unimpaired for two to three months whether stored in the refrigerator or kept at room temperatures. A complete report of the work has since been published in the Indian Journal of Medical Research, Volume XIII, No. 4, page 835.

(b) *Beri-Beri.*—The Indian Research Fund Association sanctioned a grant of Rs. 2,000 for a preliminary investigation into beri-beri and schistosomiasis in Burma. The work done on beri-beri consisted of a general enquiry into the occurrence of the disease; into its distribution by areas, race and religion; dietary conditions in representative areas; details of rice milling and composition of rices, etc. Much ground has been cleared up for further work.

(c) *Schistosomiasis.*—This investigation was held up for want of cases despite very careful enquiries.

(d) *Leprosy.*—Its special treatment at the leper asylums in Burma was supervised and generally controlled. This institute issued 51,600 c.cs. of hydnocarpus oil and creosote for use at the asylums and elsewhere. The preparation was tried on 5 cases at the institute and was found to be non-irritant and well-borne. All cases showed distinct improvement—one of them was apparently cured.

Water examination.—An extended series of examinations of water samples by special methods has been carried out with the object of simplifying the methods and increasing the value of bacteriological results.

Pasteur Institute, Calcutta.

123. 5,585 patients attended as against 1,995 in 1924—the year during which the institute was started. 1,153 patients received advice, 58 discontinued treatment and 206 voluntarily abandoned treatment; thus 4,168 patients completed treatment. The increase in attendance was attributed to the Government of Bihar and Orissa having decided to send all their patients to this institute instead of to Kasauli. Of the cases treated 33 developed hydrophobia—3 during the treatment, 13 within ten days after completion of treatment, and 17 more than 15 days after completion of treatment. The total hydrophobia rate was 79 per cent. and the failure rate 41 per cent. against 1.16 and 48, respectively, in the previous year.

Of the 4,168 cases who completed the treatment 3,020 were bitten by dogs, 1,093 by jackals, 23 by cats, 9 by monkeys, 7 each by men and horses, 2 each by asses and cows, 1 by a tiger and 4 by mongese.

Indian States

Public Health Institute, Mysore.

124. The bulk of the work in the chemical section related to water analysis. The bacteriological section conducted 3,440 examinations. 334 samples of water were examined quantitatively for the presence of cholera vibrio. with negative results. Of 2,601 samples of blood examined 962 gave positive results. 138 cases were examined in the toxicological section.

*The Indian Research Fund Association (I. R. F. A.). (1925-26.)

125. The various papers published in the "I. J. M. R."—the organ of the Association—and in the "I. M. G." or other papers on the under-mentioned subjects by workers under the Association will be found listed in detail in the Appendix to Section V of Volume I of this report (page xxxv). The activities of the I. R. F. A. are now more widespread than in the few years prior to this, on account of the restoration of the former grant-in-aid by the Government of India. This has enabled the Governing Body of the Association to cast the research net more widely than has been lately possible and has allowed of the initiation of several types of research which were urgently required. The following is a brief resumé of the various investigations undertaken during the financial year under review (1925-26).

* This Association will be referred to subsequently as the I. R. F. A., the "Indian Journal of Medical Research" as the I. J. M. R. and the "Indian Medical Gazette" as I. M. G.

Leprosy.—Dr. E. Muir of the School of Tropical Medicine and Hygiene, Calcutta, continued his work, the Association contributing Rs. 12,000 to the School to meet his pay and allowances and Rs. 5,000 for treatment purposes. He was able to undertake the training of medical officers in the latest methods of treatment and to supervise the treatment of lepers at certain institutions. Various provinces sent their medical men to Dr. Muir's clinique for special training. The efficacy of certain drugs was also tested, *e.g.*, Stevarsol; Calmette's vaccine; Sanocrysin; Tryparsamide; Hydnocarpus illicifolia oil; Sodium hydnocarpate. The value of inoculation with kala-azar of a vaccine supplied by Dr. Hassen of Cairo, and of a vegetable drug sent by Dr. Miller of the Almora Leper Asylum (United Provinces) were also tested.

Various other aspects of the leprosy problem received attention, thus a study of the bearing of syphilis upon leprosy led to interesting results now published in the January 1927 number of the "I. J. M. R." (Volume XIV, No. 3). "Avenyl" a large molecule preparation of mercury, prepared and sent by Dr. T. A. Henry of the Wellcome Chemical Research Laboratory, London, was tested with promising results which were published in the "I. J. M. R." (Volume XIV, No. 2). The Kahn reaction was tested with the Wassermann reaction and found to be suitable for detecting syphilis which complicated leprosy. Rat leprosy was produced experimentally easily in white rats after an incubation period of three or four months. The study of the lipase content of the blood in leprosy was continued. Good results continued to be obtained with hydnocarpus oil which, given by subcutaneous infiltration, is at present the standard drug in the treatment of the disease.

Mr. Nishi Kanta De, B.Sc., continued his chemical studies in connection with the extraction of oils from seeds of *Hydnocarpus wightiana* and *Hydnocarpus anthelmantica* by cold press, hot press and with ether; the preparation of ethyl esters from cod liver oil and the former oils by cold and hot process; the determination of physical and chemical characteristics of oils; the adjustment of pH of culture medium; estimation of the lipase content of blood and testing of serum for syphilis by the Sigma reaction.

Revision of Indian Culicidæ.—Though Captain Barraud remained employed continuously on the work of the Kala-Azar Commission, it was hoped that his services would have been available for a brief period of work on the "Culicidæ" collection at Kasauli. This, however, was impossible in view of the importance of his work with the Commission. Consequently no additional monograph on the "Revision of the Culicine mosquitoes of India" was able to be completed. Recently this has been arranged and additional monographs are now in the press.

Malaria.—(a) *The inquiry on the cinchona alkaloids and compounds in the treatment of malaria* by Major H. W. Acton, I.M.S., in collaboration with Major R. N. Chopra, I.M.S., was continued at the School of Tropical Medicine and Hygiene, Calcutta. This sought to explain the difference in efficacy of treatment by quinine and quinidine. It was found that, although quinidine was more powerful in its action than quinine, there were objections to its general use such as the fall of blood pressure and the hindrance to gastric digestion. Further, it was

shown that the more powerful action of quinidine was due to the fact that a greater concentration was attained in the portal blood. Other experiments were conducted on the anaesthetic and parasitocidal action of the different cupreine and cupreidine compounds, the results of which will be published in due course.

(b) *Quinine and Malaria Inquiry*.—Captain W. Bird, R.A.M.C., took over the inquiry from Major J. A. Sinton in November 1925. The co-operation of the Army authorities was ensured through the courtesy of the Director, Medical Services in India, who placed Captain Bird, R.A.M.C., under the direction of the Malaria Bureau of the Central Research Institute, Kasauli, and in whole time charge of the Army Malaria Treatment Centre at Kasauli (altitude 6,050 feet) where over 200 cases were available for observation without risk of fresh infection. A study of the comparative efficacy of the various cinchona alkaloids, and of stovarsol in the treatment of chronic benign tertian malaria was carried out.

(c) *Malaria Inquiry at Lahore*.—This inquiry was conducted by Major T. A. Hughes, I.M.S., of King Edward Medical college, Lahore. The programme of work which was set was to study the mode of origin of Urobilin in chronic malaria patients (*vide* I. J. M. R., Volume XIV, July 1926); to study the effect of quinine on phosphorous metabolism in man (*vide* I. J. M. R., Volume XIV, January 1927) and to study the effect of *Gymnema sylvestre* on the sugar of the blood. The leaves of this plant are used as a popular remedy for diabetes in the Punjab. No effect was noticed; but the results were not deemed worthy of publication.

(d) *Malaria Survey at Allahabad*.—This military research was undertaken by Captain M. L. Dhavan, I.M.S., with a view to incriminating the vector in a certain area of Allahabad Cantonment. A general survey of the area was made; but the only place where anophelines, other than *A. rossi*, were found breeding was the Neemuch lake situated at a distance of half a mile (as the crow flies) from the British Infantry Barracks. Though larvæ of *A. fuliginosus* were found along its banks throughout the year, adult *A. fuliginosus* were not found in any of the barracks or bungalows till September 1925, when two only (one male and one female) were caught in one of the cowsheds of the local military dairy farm. The female, on dissection, shewed infection of both the stomach and the salivary glands. *A. fuliginosus* was thus definitely established as a vector. No other variety of anopheline either in adult or larval form was found. Children in the small village of Neemah situated on the west bank of the lake showed a spleen rate of 50 per cent.

(e) *Malaria investigation regarding Mosquito Repellants at Kohat*.—This military inquiry which was carried out by Captain A. C. Chatterjee, I.M.S., studied the respective values, as mosquito repellants, of Yellow Wash, P. C. Oil, Commercial Creosote Oil, Giemsa spray, Formalin spray, Bazaar dhup, Cocksec stick. His conclusions are that commercial creosote, from the point of view of "efficacy plus cost", is the best repellant for barracks and dwellings.

(f) *Malaria Bibliography*.—Major J. A. Sinton, V.C., O.B.E., I.M.S., Officer-in-charge, Malaria Bureau at Kasauli—the central Government's organisation for malaria—visited all provincial headquarters

with a view to examining, collecting and recording all information in regard to work that had been done previously on malaria. The results of his tour will be embodied in a memoir.

(g) *Malaria Class at the Central Research Institute, Kasauli.*—The instruction in malariology, as given prior to 1915 by organised classes, was resuscitated. The first class was held at Kasauli and was attended by seven officers, representing the army and the various provinces in India.

Plague.—(a) *Plague inquiry in United Provinces.*—This inquiry was conducted under the supervision of the Director of Public Health and under the immediate control of the Assistant Director of Public Health (Dr. Pandya). The I. R. F. A. granted Rs. 16,000 and the local Government Rs. 10,144 towards the inquiry. There was some delay owing to difficulties in assembling the staff. The object of the inquiry was to establish the seasonal prevalence and geographical distribution of rats and rat-fleas in the United Provinces and to co-relate this with known plague incidence. As a preliminary, the instruction of a number of provincial medical officers in the identification of rats and rat-fleas was undertaken. Fleas collected were identified in a laboratory specially for the purpose. Apart from the study of the bionomics, life history and breeding habits of these fleas the final results should be valuable in pointing the way to further research work on the transmission of plague under the different climatic conditions of the United Provinces.

(b) *Anti-Plague Vaccine Inquiry.*—Researches on methods for improving the anti-plague vaccine were continued by Dr. B. P. B. Naidu, assisted by Dr. Avari and Jemadar Shamsheer Jang, under the direction of the Director, Haffkine Institute, Bombay. The work done has been referred to already (*vide* paragraph 117) but as it is important it has been summarised below:—

1. The value of standardising plague vaccine by testing it on rats has been established and this procedure has been adopted at the Haffkine Institute.
2. Bouillon with a PH 6·8 is the best for the production of vaccine but buffering the media to maintain it at this point is of no advantage. The vaccine can be improved, as Haffkine showed, by adding growth from an agar culture to the ordinary broth vaccine.
3. Bouillon made from casein also produces a good vaccine.
4. Sensitised vaccines are not superior to Haffkine's prophylactic.
5. The importance of having a virulent strain has been again emphasised by experiment.
6. Merckochrome has no influence on experimental plague in rats.

Kala-Azar.—(a) *Kala-Azar Commission.*—The Commission continued its activities during the year. Major H. E. Shortt, I.M.S., succeeded Lieutenant-Colonel S. R. Christophers as Director, and Captains Barraud and Craighead were members.

Its main activities were centred round the solution of the problem of transmission, and considerable progress was made in various directions which are briefly enumerated below:—

- (1) An exhaustive series of control experiments showed that the flagellate seen in *P. argentipes* after feeding on cases of kala-azar was *H. donovani*—the causative agent of the disease.

- (2) The theory of possible transmission by the bed-bug *C. hemiptera* was exploded.
- (3) At least one species of the genus *Culicoides* biting man in Assam was eliminated as a possible vector.
- (4) *Triatoma (Conorhinus) rubrofasciatus* was eliminated as a possible vector.
- (5) White mice were proved to be highly susceptible to intra-peritoneal inoculation of cultures, but incapable of infection when these cultures were administered orally.
- (6) The life history and morphology of *H. Donovanii* in culture provided much laborious work. It represents the greatest recent advance in the study of the flagellate forms of the parasite.
- (7) The life-history and morphology of *H. donovani* in the sandfly *P. argentipes* were carefully worked out. On the facts adduced in this description are based all the efforts of the Commission in their attempt to definitely incriminate the sandfly by the production of an experimental transmission through its agency.
- (8) Further advances were made in the technique of breeding sandflies in captivity.
- (9) The problem, presented by the conditions necessary to enable the sandfly to oviposit successfully in confinement and to live to take three or more feeds subsequent to the first feed at which it acquired the infection, was solved by intensive study.
- (10) The technique for the successful breeding of white mice in India was developed with a view to maintaining a large stock of healthy experimental animals.
- (11) The findings of the Commission, regarding their transmission experiments on animals with *P. argentipes*, seemed to indicate that animals were unsuitable for this experiment and that experiments on human being alone would determine the rôle played by the sandfly in transmission.
- (12) Sandflies were caught in nature for breeding purposes; unsuccessful attempts were made to infect sandflies in their larval stages; Row's bodies were investigated.
- (13) A re-examination was made of the flagellate described in 1914 as *Herpetomonas phlebotomi*, and reasons were shown for regarding it as belonging to a different genus, viz., the genus *Bodo*.
- (14) A kala-azar survey of Madras City was done; throughout the areas visited diagnosis and treatment have formed part of the routine work.

Much of this work formed the subject of papers which have been published in the I. J. M. R.

(b) *Ancillary inquiry into Kala-Azar*.—The work was continued at the School of Tropical Medicine and Hygiene, Calcutta, under Dr. L. E. Napier assisted by Dr. Smith, and concentrated on the sandflies of the various species found in and around Calcutta, more especially on *Phlebotomus argentipes*. The bionomics of this species was studied and large numbers were bred in the laboratory for experimental purposes. Attempts were made to infect animals by placing leishmania-infected sandflies to feed upon them. No actual proof that the sandfly transmits the disease was forthcoming but the evidence in favour of this hypothesis was added to.

(c) Dr. Brahmachari continued his researches into the chemotherapy of antimonial compounds in kala-azar infection. For details of the work, the annual report of the Scientific Advisory Board for 1925-26 should be referred to.

Bovine Tuberculosis Inquiry.—Dr. M. B. Soparkar in co-operation with Dr. J. T. Edwards, Director of the Imperial Institute of Veterinary Research, Muktesar, continued to hold charge of this inquiry. The work done may be briefly summarised as follows:—

- (a) Experiments were made to test the effects of human and avian tubercle bacilli upon Indian cattle.
- (b) The cause of the mortality following upon vaccination of cattle at the Imperial Institute of Animal Husbandry and Dairying, Bangalore, against Johne's disease was investigated and experiments were made to develop a method to render safe vaccination against Johne's disease by intravenous inoculation with living avian bacilli.
- (c) Different methods of applying the tuberculin test in indigenous cattle were studied upon healthy and infected animals.
- (d) The incidence of tuberculosis among cattle and swine in Bombay was studied. Several strains of tubercle bacilli of bovine and porcine origin and from human cases of surgical and glandular tuberculosis were collected for investigation.

Antivenine Inquiry.—The inquiry was conducted by Rev. Father J. F. Caius, S.J., at the Haffkine Institute, Bombay, in the intervals of his other work. In February 1926, five lots of antivenomous serum, which had been kept for two years under different storage conditions were sent to Major L. A. P. Anderson, I.M.S., to test their potency. The tests, though incomplete owing to Major Anderson's departure on leave, went to show that, after two years, the potency was still very high.

Maternal Mortality and Morbidity in Child-birth in India.—Dr. M. I. Balfour assisted by Dr. Agnes Murphy, W.M.S., commenced this inquiry at the Haffkine Institute, Bombay, because of its facilities for work in close proximity to the large women hospitals in Bombay. Information regarding the conditions of Indian childbirth was collected from maternity hospitals in different parts of India by means of a

questionnaire, and a study was commenced of the anæmias of pregnancy which seemed to be one of the commonest causes of maternal mortality in India.

In 60 cases investigated in Bombay city, the maternal mortality was 36·4 per cent. and the foetal mortality 54·5 per cent. The blood changes were somewhat similar to those of pernicious anæmia with high colour index and some nucleated red cells. A gram negative coliform bacillus was found in the urine of many of the typical cases without any apparent bladder disease. The urine of normal pregnant women was found to be sterile, while that of some non-pregnant women suffering from anæmia without apparent cause contained *B. pyocyaneus*.

The epidemiology of the disease and its possible connection with malaria were under investigation, as were also the causes of still-birth and puerperal sepsis.

Cholera—(a) Epidemiology of Cholera.—Major A. J. H. Russell, I.M.S., Director of Public Health, Madras, conducted this inquiry. Three papers were completed by him, two of which have been published in the I. J. M. R. during the year. One of these dealt with the question of the periodicity of cholera epidemics for all provinces of India except Bengal and Assam; the other two with correlation of the incidence of cholera with four climatic factors, viz., rainfall, humidity, temperature and pressure.

(b) Cholera in Bengal.—This inquiry did not commence till mid November 1925 and Dr. B. B. Brahmachari took it up in January 1926 on his return from Japan. Besredka's method of oral administration of bilivaccin for prevention of cholera was tried on a small scale. The results were satisfactory. It was stated that though Bengal has endemic cholera, it was not *the* home but only one of the homes of the disease, Bihar and Orissa being in this respect worse.

(c) Cholera Inquiry in Asansol Mining Settlement.—This investigation into the endemicity of cholera in the above Settlement was conducted by Dr. J. W. Tomb in conjunction with Captain G. C. Maitra, I.M.S., of the School of Tropical Medicine and Hygiene, Calcutta. A method of cultivating vibrios—the “open bowl method”—was elaborated especially for field work. For full details the “I. M. G.” for February 1926, page 56 and for November 1926, page 537 should be referred to. They have shown that not less than 30 per cent. of the inhabitants of the Mining Settlement are chronic carriers of non-agglutinating vibrios. They were driven to the conclusion that the non-agglutinating vibrio in the human intestine (which is itself capable of causing cholera) takes on the agglutinating characteristic under certain vital conditions in the human intestine which are at present unknown, and in this mutation form is the cause of epidemic cholera. The report of the Scientific Advisory Board should be consulted for further details.

(d) Geographical Survey of Cholera in Madras.—This inquiry was conducted under the supervision of Major Russell, I.M.S., Director of Public Health, Madras. Detailed statistics were collected from the districts which suffered severely during the previous cold weather and an examination was made of the cholera reports from 1,877 onwards including Dr. Cornish's well-known memorandum on cholera in Madras Presidency.

(e) *Cholera Inoculations and Treatments in Madras*.—Major Russell conducted this inquiry also in Madras. Revised information regarding the incidence of cholera among the inoculated and the controls in the same or neighbouring families was collected. Major H. H. King, I.M.S., at Guindy advised on the statistical side of the inquiry. Results will be published.

Helminthological Inquiry.—Dr. V. T. Korke, who was in charge, published a report of previous work (*vide* I. J. M. R., Volume XIV, No. 2). The Enquiry was broadened so as to embrace larger areas in Bihar and Orissa. The four large central jails at Bhagalpur, Buxar, Hazaribagh and Gaya offered an average controlled population of over 3,000 convicts. The objects were to map out the prevalence of various types of helminth infection more especially ankylostomes to study systematically the adult parasites collected after treatment with a view to a revision of the Indian species, and to study the life history of hookworm in nature. The predominant species investigated was *A. duodenale*.

A study of the reaction of hookworm larvæ to the thermal stimuli from different standpoints has shown that *hæti* has a marked influence on the movements and the directions of the metamorphosed larva of *A. duodenale* and *N. americanus* in water. The importance of being able to base our methods of prevention on breaking the life cycle at certain vulnerable points is obviously considerable. Filarial incidence was also studied in the convict population of the Bihar area.

Ankylostomiasis Field Inquiry.—Dr. Asa C. Chandler conducted this inquiry into the epidemiology and distribution of hookworm and other helminthic infections in various parts of India. He envisaged a rapid geographical survey and began by visiting a large number of localities in Bengal. Any habits of the people bearing on helminthic infections and the topographical, soil, and climatic conditions were studied. Samples of stools were examined for the degree as well as incidence of infection with all helminths. Many new epidemiological facts have been elicited and the results will be published in the "I. J. M. R." in a series of sections under the title "The Prevalence and Epidemiology of Hookworm and other Helminthic infections in India."

Ankylostomiasis Inquiry at Dehra Dun.—The incidence of ankylostomiasis among the Indian Troops in Dehra Dun in 1925 was investigated by Major G. Covell, I.M.S.; Clayton Lane's method of direct centrifugal flotation was employed. Gurkha battalions were found infected to the extent of 93 per cent.; the Pack Battery gunners and drivers to 80 per cent.; the Transport drivers to 78 per cent.; and the local inhabitants to 72 per cent. With a view to the institution of mass treatment of heavily infected units, it was recommended that a hookworm survey of all Indian Troops should be carried out.

Sandfly Fever Inquiry at Peshawar.—Lieutenant-Colonel T. C. McCombie Young, I.M.S., and Captain A. E. Richmond, R.A.M.C., conducted this inquiry. Their main efforts were directed towards the discovery in the Peshawar military district (the work being confined to the cantonments of Peshawar and Landikotal) of the breeding grounds of *P. papatasi*. These were identified by the recovery of larvæ from

soil containing them and by using a specially devised technique. The chief epidemiological facts noted were—a greater incidence of fever among non-immune British who remain in the Khyber one year only, a lesser incidence among the Gurkhas, and a much lower incidence among other Indian troops. Laboratory work on the virus of sandfly fever yielded no confirmation of Whittingham's observations as to a *Leptospira* being the cause. A new breeding technique was devised.

Heatstroke in Allahabad in relation to Meteorological conditions during 1925.—Colonel (now Major General) F. H. G. Hutchinson, C.I.E., I.M.S., when Assistant Director of Medical Services of the Allahabad Brigade, undertook this inquiry with the object of throwing more light on the etiology of heatstroke in his brigade area and on its unequal incidence in the three cantonments of Allahabad, Cawnpore and Benares. Meteorological conditions in 1925 being unfavourable the incidence of heatstroke among British troops from 1916 to 1924 was analysed and it was concluded that an epidemic of heatstroke does not occur in peace conditions without plenty of warning, that it seems invariably to follow a period of hot dry weather, and that the length of this period in its relation to heatstroke varies indirectly with the heat at night.

Observations on Anæmia with Sprue like conditions amongst troops in Bombay by Captain P. N. Basu, I.M.S.—All cases examined gave a history of diarrhœa simulating closely that of sprue and accompanied by ulcers of the tongue. 16 cases in all were studied along with controls. Blood, fæces, urine and gastric contents were examined; but no definite opinion was hazarded as to the cause of anæmia, though it seemed possible that intestinal organisms played a large part in this.

Inquiries into (1) Carrier condition in cases of infection by enteric group organisms, (2) B. asiaticus, Salmonella group and allied infections in Madras district and (3) Throat infections in Madras district.—The first part of this inquiry was directed to the discovery of a method by which the "Carrying" period in chronic carriers of E. Group infection could be shortened. The inquiry tended to show that the chronic carrier is neither so frequent nor so dangerous as was supposed. The second part of the inquiry was directed to the determination of the prevalence or otherwise of *B. asiaticus* and *Salmonella* infections.

Pyrexia Inquiry at Quetta.—This investigation begun at the District laboratory in Quetta early in 1926 was not completed owing to the reposting of the officer conducting it.

Inquiry into the Nature and Incidence of the Local Dysentery and Diarrhœa.—Major J. A. Manifold, R.A.M.C., at the District laboratory, Poona, has proved that the incidence of bacillary dysentery is very much greater among the troops than is amœbic dysentery which is of rare occurrence; and that *Bacillus flexner* is responsible for the majority of infections. Complete serological observations were made on bacillary dysentery cases (*B. flexner* infections) and histograms prepared; as also on cases suffering from *B. schmitz* and *B. shiga* infections.

Relapsing Fever Inquiry.—The inquiry was undertaken by Lieutenant-Colonel J. Cunningham, I.M.S., in October 1925. During his absence on leave spirochæte strains had been collected and kept

alive in squirrels. The work consisted of corroboration in northern endemic areas of results already obtained in southern India; and determination of the type of spirochæte responsible for relapse in the second animal.

Strains of spirochæte and samples of blood from human cases were brought from Multan district where a small outbreak of relapsing fever was reported. These were under investigation at the close of the year. The spirochætes responsible for relapses were carefully studied and definite results were obtained pointing to the fact that different serological types were responsible for further attacks of the disease. A technique was evolved which included the invention of certain new appliances for handling small animals and which could also be utilised with infected rats and mice.

Deficiency Diseases Inquiry.—The work of this inquiry which had been interrupted in 1923, owing to retrenchment, was resumed by Lieutenant-Colonel R. McCarrison, C.I.E., I.M.S., in August 1925. The following is a brief resumé of some of the work carried out:—

- (1) A study of the effects of manurial conditions on the nutritive and vitamin values of millet and wheat: a report on this work was submitted for publication (I. J. M. R., Volume XIV, No. 2). Co-operation was maintained with the Agricultural Research Institute, Coimbatore, where the Agricultural Chemist to the Madras Government continued his complementary study of this subject from the point of view of plant nutrition. The results reached indicate that manuring has a marked influence on the nutritive value of food grains and on the reproductive quality of these grains when used as seeds. This work was being extended in association with the Agricultural Department.
- (2) In collaboration with the Chemical Examiner, the Agricultural Chemist to the Government of Madras and Dr. R. V. Norris of the Indian Institute of Science, an investigation was begun dealing with the relation of deficiency of iodine in the soil to endemic goitre.
- (3) The work in regard to the relation of rice to beri-beri in India was resumed and later on he demonstrated that a condition presenting all the pathological features of beri-beri could be produced in pigeons on diets which were rendered deficient in Vitamin B. but in which no toxic agent was present. The investigation is said to have dispelled the confusion which hitherto existed between the conditions known as *Polyneuritis columbarum* and true beri-beri and clarified the position in regard to the causation of the latter malady.
- (4) A study of the relative values of various food grains in common use in India was begun. Papers were submitted for publication (I. J. M. R., Volume XIV, No. 3).
- (5) The relative values of the national diets of the Indian peoples, as determined by biological assay, and their relation to prevalent diseases were investigated. One paper was submitted for publication.

- (6) The study of the relationship, if any, of faulty food to cancer was in progress.
- (7) Additional evidence was accumulated demonstrating the important part played by faulty and ill-balanced food deficient in vitamins in the causation of various common diseases, *e.g.*, gastro-intestinal disease generally acute and chronic, diseases of the lungs.

Beri-Beri Inquiry in Burma.—The preliminary inquiry into beri-beri in Burma was carried on by Lieutenant-Colonel J. Taylor, I.M.S., Director, Pasteur Institute of Burma and Major Martin, I.M.S., and consisted of:—

- (a) A study of available statistics and records of cases and deaths to determine the incidence and distribution of cases; and of reports on former outbreaks.
- (b) Local district inquiries into the incidence of beri-beri over a selected portion of the province.
- (c) Investigation of outbreaks occurring during the year.
- (d) An inquiry into the dietaries of the different classes of the population.

The inquiry has shown that over the greater portion of the populous agricultural districts, the incidence of beri-beri is very slight though a high incidence was found among immigrant Hindu coolies in the large coastal towns. Beri-beri occurred in the form of definite outbreaks in communities situated under special circumstances. The inquiry into diets showed that the diet of Burman Buddhists was varied and generous and not such as would ordinarily be associated with the occurrence of beri-beri. In the case of the outbreaks in special circumstances two factors were found to be present in most cases in varying degree, *viz.*, an almost exclusive rice diet and conditions of storage of rice which would permit of deterioration owing to the dampness of the monsoon period. The study of the forest outbreaks yielded important information which will be of great value. A report was under preparation.

Lathyrism.—The inquiry in its three aspects, *viz.*, chemical, botanical and pharmacological, was continued under the same three officers, as previously. Work was chiefly directed to investigating certain difficulties and new lines of research which arose out of the main experiments leading up to the paper published in the April 1925 number of the "I. J. M. R." The experiments of monkeys fed on *akta* were terminated in July 1925.

Schistosomiasis—(a) *at the Haffkine Institute, Parel, Bombay.*—Dr. N. Hamilton Fairley continued his study of the pathology of *Schistosomum spindalis* infection. His work showed that *S. spindalis* found in goats and cattle in India was closely allied to *S. mansoni* and *S. japonicum* from the standpoint of comparative pathology.

(b) *Inquiry in Burma.*—Despite the issue of a questionnaire no precise information as to the existence of any cases on which inquiry could be started was received by the Director, Pasteur Institute, Burma.

Sprue Inquiry at the Haffkine Institute, Bombay.—A report summarising their researches on sprue was published by Dr. N. Hamilton

Fairley and by Lieutenant-Colonel F. P. Mackie, I.M.S., in the "I. J. M. R." Both these officers were satisfied that sprue was a definite clinical entity; but that cases occurred in which the classical features were absent when first seen and which later proved to be sprue. They did not credit endocrine deficiency with playing a primary rôle in the ætiology or being an essential feature of the disease. For further details the annual report of the Scientific Advisory Board should be consulted.

Indigenous Drugs Inquiry.—Researches into the properties of indigenous drugs were continued by Major R. N. Chopra, I.M.S., of the School of Tropical Medicine and Hygiene, Calcutta. He tested pharmacologically and experimentally the claims of the following most widely used drugs of the Ayurvedic and other local systems:—

- (a) *Adhatoda vesica* (Basak) (*vide* I. J. M. R., Volume XIII, No. 2, October 1925).
- (b) *Cephalandra indica* (Telakucha) (*vide* I. J. M. R., Volume XIII, No. 1, July 1925).
- (c) *Shilajetoo*—a well known anti-diabetic remedy in indigenous medicine.
- (d) Work on the chemical composition and therapeutic activity of drugs known to the British Pharmacopœa and grown in India including *hyocyamus*, *valerian*, *belladonna*, *podophyllum* and *digitalis* was completed and the results were embodied in a paper entitled "Some medicinal plants from the Himalayas" (*vide* I. J. M. R., Volume XIII, No. 3, January 1926). He has also published two papers on "Biological Assay of Digitalis Preparations in the Tropics" (*vide* I. J. M. R., Volume XIII, No. 4) and "Chemical Composition and Anti-diabetic Properties of Silajit" (*vide* I. J. M. R., Volume XIV, No. 1). He also carried out work on the following drugs:—
 - (i) *Psoralia corylifolia* (Babchi)—useful in leucoderma.
 - (ii) *Butea frondosa* (Polas)—a good anthelmintic for round-worms.
 - (iii) *Saraca indica* (Asoka)—used in uterine diseases.
 - (iv) *Terminalia arjuna* (Arjun)—a cardiac tonic.
 - (v) *Tribulus terrestris* (Gukkur)—a diuretic.
 - (vi) *Abrak-bhasman* and *Banga-bhasman*—anti-diabetic in indigenous medicine.
 - (vii) *Serraluta anthelmintic* (Somraj).

Studies on the bacterial flora of the intestine with special reference to (1) gram negative bacilli, (2) streptococci and (3) the flora in relation to various diets.—Though funds were provided for this research, it was not possible to start it owing to the transfer to another special investigation of the officer who was designated for it.

Tick fever in the hounds of the Madras hunt.—Work was commenced under the direction of Lieutenant-Colonel E. W. C. Bradfield, O.B.E., I.M.S. (Professor of Surgery, Medical College, Madras), with the survey

of ectoparasites of the hounds and jackals. The predominating ectoparasite was a tick, *Hæmaphysalis bispinosa*. These were collected, dissected and studied. In some of the infected ticks peculiar sausage shaped bodies were found and submitted to Lieutenant-Colonel Christophers. It was found that *P. canis* was inoculable to jackals and a paper on this subject was published (*vide* I. J. M. R., Volume XIV, No. 1, July 1926). In one of the ticks of the fox a few larval nematodes were seen and will be described later.

Indian Journal of Medical Research.—This journal completed its 13th year of existence and continued to maintain its high reputation. Memoir No. 4—(Reports of the Kala-Azar Commission, India—report No. 1, 1924-25) was published during the year.

Grants.—Grants were made by the Association to (i) Biochemical Section of the Haffkine Institute, Bombay (Rs. 6,000) to meet half the recurring charges; (ii) School of Tropical Medicine and Hygiene, Calcutta, (Rs. 50,000) to meet the cost of two professors of tropical pathology and bacteriology, and of medical entomology and protozoology; (iii) I. R. F. A., library at Central Research Institute, Kasauli (Rs. 1,000) for the purchase of books and journals; (iv) Imperial Bureau of Entomology, London (£300).

126. *Restoration of the Research Grant.*—The complete restoration of the original five lakh annual grant was agreed to in principle by the Standing Finance Committee of the Government of India during the year. This enabled the Governing Body of the I. R. F. A. to extend its activities. Four of the seven non-specified appointments in the Medical Research Department which were in abeyance owing to the retrenchment policy were resuscitated.

SECTION VI.

MEDICAL INSTITUTIONS.

I—State-Public, Local Fund and Private-aided Civil Hospitals and Dispensaries.

British India.

127. *General.*—There were 3,956 of these institutions in existence in India at the end of 1925 as compared with 3,669 in 1924—an increase of 287.

The total number of patients treated was 41,135,578 (732,975 in-patients and 40,402,603 out-patients) as compared with 38,686,249 (694,783 in-patients and 38,686,249 out-patients) in 1924. The increase was noticeable in all the provinces except in Assam and United Provinces. The greatest reduction was in Cachar district in Assam, partly due to the levy of a nominal fee of one anna per out-door patient on each new case. The closing of travelling dispensaries, absence of sub-assistant surgeons from dispensaries in connection with the kala-azar survey work, and the comparative healthiness in some localities in Assam also helped in the decrease. In the United Provinces the closing down of travelling dispensaries and the apparent indifference of the rural population to seek or obtain medical relief were responsible for the decrease. The number of operations rose from 1,278,036 in 1924 to 1,711,695 in 1925.

The following tabular statement compares the figures of 1924 with those of 1925 for all provinces:—

Province.	Number of Institutions.	Number of in-patients.	Number of out-patients.	Total number of patients.	Number of operations.
Delhi	1924 15	10,215	319,295	329,510	13,584
	1925 23	15,931	331,917	347,848	17,046
Bengal (excluding Calcutta).	1924 684	40,108	5,005,260	5,045,368	98,206
	1925 755	42,531	5,566,893	5,609,424	101,252
Calcutta	1924 26	37,728	877,220	411,918	37,960
	1925 27	40,786	428,646	469,432	34,858
Assam	1924 174	10,770	1,568,202	1,578,972	17,263
	1925 178	10,942	1,460,297	1,471,239	17,570
Bihar and Orissa	1924 416	44,919	4,057,813	4,102,732	249,507
	1925 447	49,129	4,298,313	4,347,442	298,739
Central Provinces	1924 201	21,028	1,853,488	1,874,516	62,502
	1925 203	22,275	1,871,750	1,894,025	68,306
United Provinces	1924 394	87,652	5,379,189	5,466,841	237,050
	1925 359	88,312	5,293,774	5,382,086	238,400
Punjab	1924 436	103,506	5,825,573	5,935,079	292,028
	1925 450	117,592	5,866,648	5,984,240	294,819
Burma	1924 218	85,797	1,905,175	1,990,972	69,978
	1925 219	90,401	1,967,313	2,057,714	72,277
Bombay	1924 399	78,514	2,676,003	2,754,517	114,841
	1925 400	80,982	2,754,764	2,835,746	117,851
Madras	1924 628	145,651	8,502,474	8,648,125	33,838
	1925 817	149,988	9,283,281	9,433,269	390,887
North-West Frontier Province.	1924 48	13,203	793,383	811,586	40,490
	1925 48	13,606	842,090	855,696	43,967
Baluchistan	1924 30	9,692	418,174	427,866	10,661
	1925 30	10,200	436,917	447,117	15,713
Total	1924 3,669	694,788	38,686,249	39,381,032	1,278,086
	1925 3,956	732,975	40,402,603	41,135,578	1,711,695

Provinces.

128. *Delhi*.—25 medical institutions were open on the 31st December 1925. These included 12 local fund, 4 private-aided, 7 state-public, 1 state-special and 1 railway dispensary. There was a large increase in the number of patients and surgical operations. A clinical laboratory is attached to the civil hospital, Delhi. Both in-door and out-door attendance increased from 14,240 and 376,289 in 1924 to 16,303 and 427,672, respectively, in 1925. There were 91,620 admissions for malaria, 5,706 for rheumatic fever, 4,150 for venereal disease, 4,532 for dysentery, 1,694 for influenza, 2,379 for pneumonia, 1,008 for tuberculosis, and 16 for kala-azar. 17,163 operations were performed. Total income, including the cash balance of Rs. 18,887, of all classes of these institutions amounted to Rs. 3,88,749 and the expenditure to Rs. 3,70,672. The municipality of Delhi proposes to substitute for the present antiquated isolation hospital, a new combined chronic diseases and isolation hospital.

129. *Bengal (excluding Calcutta)*.—1,032 medical institutions were at work at the end of the year 1925 as against 955 in 1924. Fewer places in the rural areas of Bengal are now without medical help. Temporary dispensaries were opened at fairs and in some districts to render medical aid in areas affected by malaria or other epidemic diseases. Some of the district boards were said to take keen interest in the opening of new dispensaries. 7,625,421 patients (71,375 in-door, 7,554,046 out-door) were treated at these institutions as compared with 6,864,361 (65,762 in-door and 6,798,599 out-door) in the previous year; more than one-third of the in-door patients being treated at the district headquarters hospitals. Malaria with 2,271,203 cases treated (1,826,572 in 1924) was the chief cause of sickness. 120,679 patients attended for kala-azar (76,014 in 1924). In all dispensaries special drugs and equipments were provided for the diagnosis and treatment of kala-azar and two special days were allotted weekly for this work. Leprosy was treated chiefly in the three leper asylums at Gobra, Raniganj and Bankura. The scheme for the establishment of a leper colony in Midnapore district, which had received the administrative approval of Government, progressed slowly. 135,993 surgical operations were performed, the selected operations numbering 6,249. Excluding the opening balances, the total receipts of hospitals and dispensaries of classes I, III and IV amounted to Rs. 21,39,261 as against Rs. 21,63,840 in the previous year; and the expenditure (excluding investment) to Rs. 20,94,373 as compared with Rs. 19,54,287 in 1924.

130. *Calcutta*.—The number of hospitals and dispensaries was 32 on December 31st, 1925 (31 in 1924). The total number of patients treated rose from 486,702 (43,055 in-patients and 443,647 out-patients) in 1924 to 540,199 (45,952 in-patients and 494,247 out-patients) in 1925. The increase in the "in-doors" is attributable to additional beds, while that of the "out-doors" is the result of abolition of fees in certain institutions. 47,589 cases of malaria (42,270 in 1924) and 11,228 cases of kala-azar (8,133 in 1924) were treated—the increase of the latter is due to the expansion of kala-azar work. With the advent of improved methods of investigation and of treatment the disease is now under control. Small-pox was epidemic and 1,659 patients were treated with 518 deaths. 1,270 in-door admissions for tubercle of the lungs with

686 deaths were recorded as against 1,177 in 1924 and 790 in 1923. 18,615 patients were treated for venereal diseases (19,937 in 1924). 43,267 surgical operations were performed. Excluding the opening balance, the total receipts of classes I, III and IV amounted to Rs. 32,32,193 as against Rs. 27,68,464 in the previous year. Excluding investment, the total expenditure amounted to Rs. 28,97,603 (Rs. 27,20,872 in 1924).

131. *Assam*.—There were 237 medical institutions (all classes) on December 31st, 1925, and 11 new dispensaries were opened, whilst 4 were closed. The total number of "in and out" patients treated at all hospitals and dispensaries was 1,471,239 against 1,578,972 in 1924. All the districts except 6 showed a decrease, attributed to the closure of travelling dispensaries, to absence of sub-assistant surgeons from dispensaries in connection with the kala-azar survey work, to reduction of sickness in some of the localities as a result of the improved sanitary conditions and to the establishment of doctors in private practice. Cachar district showed the greatest reduction, due partly to the levy of a nominal fee of one anna on every new out-door patient. The percentage of the population, who received medical relief, has steadily decreased from 20·13 in 1923 and 19·76 in 1924 to 18·52 in 1925.

Two epidemic units were at work and anti-cholera inoculation was said to be gaining in popularity. The leper asylum at Sylhet and the leper hospital in Kohima returned 44 and 8 admissions, respectively. A proposal for a leper asylum at Jorhat was pending.

17,521 surgical operations were performed in all institutions. The income and expenditure of the state-public, local fund and private-aided institutions amounted to Rs. 8,27,660 and Rs. 6,34,957 as compared with Rs. 7,81,190 and Rs. 6,15,765, respectively, in 1924.

132. *Bihar and Orissa*.—There were 598 hospitals and dispensaries (all classes) at work at the end of the year 1925. 40 new dispensaries were opened and 22 were closed. In state-public, local fund and private-aided dispensaries 4,347,742 patients were treated as against 4,102,732 in 1924. The death rate, *viz.*, 23·7 per mille, was the lowest recorded. 1,072,367 cases of fevers were treated. 37,329 cases of kala-azar were treated as against 5,281 in 1919, 20,619 in 1923 and 28,669 in 1924. Ankylostomiasis is widespread throughout the province; 10,709 cases being treated in hospitals during 1925. Filariasis is common in the Orissa division; a special hospital for its treatment, which was built at Puri, contains a well-equipped laboratory. In all institutions 348,510 operations were done (293,110 in 1924). Excluding the opening balance, the total income of state-public, local fund and private-aided institutions amounted to Rs. 30,21,909 (Rs. 24,54,561 in 1924) and the expenditure to Rs. 29,33,803 (Rs. 24,20,045 in 1924).

The Radium Institute, Ranchi, which made steady progress, treated 279 cases (253 in 1924).

133. *Central Provinces*.—4 new dispensaries were opened and 3 closed. There were 303 institutions open at the end of 1925. The number of in-patients in the state-public, local fund and private-aided dispensaries steadily increased from 19,600 in 1922 to 22,275 in 1925. In-door accom-

modation is sufficient at most district towns. The out-door attendance increased from 1,853,488 in 1924 to 1,871,750 in 1925. Cinchona febrifuge was largely tried for malaria in Nimar district with satisfactory results. Tuberculosis of the lungs accounted for 2,128 admissions (1,751 in 1924); in this connection I quote the views of the Inspector-General of Civil Hospitals:—

The figures of attendance at dispensaries show however only a fraction of the real prevalence of this disease, which is undoubtedly on the increase in congested localities and industrial towns."

The Nagpur Red Cross Society has taken up anti-tuberculosis work and the proposal to provide a sanatorium for the province is said to be gathering strength. A missionary sanatorium for tuberculosis exists at Pendra Road, Bilaspur District. The increase in admissions from enteric fever (from 847 in 1924 to 1,113 in 1925) is ascribed to improved methods of diagnosis. The surgical operations numbered 68,306 (62,502 in 1924). The total expenditure increased from Rs. 10,83,617 in 1924 to Rs. 12,12,867 in 1925.

The principle of associating selected independent medical practitioners with the staff of Government hospitals in professional and educational work was gradually extended. It is deplored that the district councils and municipal committees which took over dispensaries within their limits did not give adequate attention to their requirements.

134. *United Provinces*.—The year commenced with 595 hospitals and dispensaries and ended with 557. 9 dispensaries were opened, 8 closed and 39 transferred to the public health department. The total number of patients treated was 88,312 in-patients (87,652 in 1924) and 5,293,774 out-door (5,379,189 in 1924).

In co-ordination with the Education Department, a scheme for the establishment of whole-time school medical officers was drawn up.

All the leper asylums are Government-aided. Those at Benares, Almora, Meerut, Dehra-Dun, Naini, Roorkee and Agra were allotted to the special care of the Medical Department, while those, which are more specially for segregation, are in the care of the Public Health Department.

Malaria caused 1,097,560 admissions and influenza 24,040. 238,600 surgical operations were performed. The total income, inclusive of the cash balance, and expenditure amounted to Rs. 29,46,031 and Rs. 27,74,289 as compared with Rs. 26,11,295 and Rs. 27,52,213, respectively, in 1924.

The King Edward Sanatorium at Bhowali for the treatment of lung tuberculosis continued its good work. The accommodation, which was increased, now provides 80 beds. 416 patients were admitted of whom $\frac{1}{4}$ th were discharged with arrested disease.

135. *Punjab*.—The year opened with 640 hospitals and dispensaries and closed with 640; 33 were opened and 7 closed. A scheme for the establishment of rural dispensaries in the Punjab with a view to providing medical relief on a scale commensurate with the requirements of the population was sanctioned. It provides for the opening of 375 dispen-

saries during 5 years. No new rural dispensary was opened during 1925 but active steps were being taken in all districts to work up to the programme. Government agreed to give a grant of Rs. 5,400 for construction and Rs. 1,600 for the equipment of each dispensary. The total number of patients treated during 1925 was 5,984,240 (117,592 in-door and 5,866,648 out-door) against 5,935,079 (109,506 in-door and 5,825,573 out-door) in the previous year. The increase is attributed to the popularity of the allopathic system. 294,829 operations were performed as against 292,024 in 1924. The total income of hospitals and dispensaries, including a cash balance of Rs. 1,42,194, amounted to Rs. 40,29,927 as compared with Rs. 43,43,450 in 1924. The expenditure was Rs. 38,81,597 against Rs. 42,06,627 in 1924.

136. *Bombay Presidency*.—On 31st December 1925 there were 638 medical institutions as compared with 637 in 1924. 2,835,740 patients (80,982 in-patients and 2,754,764 out-patients) were treated as compared with 2,754,517 (78,514 in-patients and 2,676,003 out-patients) last year. 636,601 women sought relief at hospitals and dispensaries (608,127 in 1924)—the increase is said to be due mainly to the employment of women doctors at general hospitals (3 female assistant surgeons and 11 female subordinate medical service officers being employed at present). The number of beds available was 6,448. Malaria (541,147), injuries (227,630), dysentery (45,385), and tubercle of the lungs (10,118) were the chief causes of admissions.

Recently the Government of Bombay have appointed a committee to take measures to stamp out malaria in Bombay city. 24 subordinate medical service officers were also detailed for this duty in parts of Konkan, Deccan and Sind. Quinine "treatments" were sold to the public in malarious districts at a cheap price.

The Surgeon General (Major-General A. Hooton, I.M.S.), incorporates in his annual report a note on the indigenous systems of medicine in which he concludes that:—

(a) "The Ayurvedic and some other indigenous systems did very good work in their day, but they are based on erroneous theories and cannot bear comparison with the modern system of medicine founded on recent advances in science. The remedies are largely secret, and there has been no proper investigation of their active principles, or standardisation of dosage."

(b) "As regards the regular practitioners of modern scientific medicine and surgery, it is generally admitted that they are superior to any others. Where they cannot be provided—chiefly for reasons of expense—it is desirable to establish some inferior class of practitioner and for moderate-sized villages, these may be on a part-time footing. It has been shown that primary schoolmasters can be very useful in this capacity, at a moderate cost."

(c) "To revert to any of the ancient systems of medicine would be a very retrograde step. They are not founded on scientific principles, and are entirely out-classed by modern scientific medicine. It is admitted that any revival of the ancient systems must be largely dependent on the assimilation of scientific knowledge. Ayurvedic medicine, on these lines, would be Ayurvedic only in name and any such scheme would be an unworthy subterfuge."

(d) "Apart from a revival of the Ayurvedic or other indigenous systems as such every effort is being made to investigate Indian drugs, and these should be utilised whenever it appears desirable to do so."

137. *Burma*.—The number of hospitals and dispensaries, including those of the Shan States Federation, increased from 289 to 291; 6 insti-

tutions being opened and 4 closed during 1925. The number of in and out-patients treated in all institutions rose from 2,164,075 (96,636 in-door and 2,067,439 out-door) in 1923 and 2,214,476 (96,476 in-door and 2,118,000 out-door) in 1924 to 2,263,743 (99,309 in-door and 2,164,434 out-door); the increase being due partly to the opening of new dispensaries and partly to increasing popularity. In institutions of classes I, III and IV, 2,057,714 patients (90,401 in-door and 1,967,313 out-door) were treated. Malaria accounted for nearly 19·54 per cent. of the in-door attendance during the triennium ending 1925. Cinchona febrifuge continued to be distributed. The in and out-door patients in the Military Police Hospitals numbered 63,329 as against 78,290 in 1924. 72,572 operations were performed during 1925. The income (including the cash balance) of the state-public, local fund and private-aided institutions during 1925 amounted to Rs. 44,99,966 against Rs. 41,90,695 in the previous year; while the expenditure was Rs. 40,02,540 against Rs. 36,27,845 in 1924.

A grant of Rs. 2,800 was made by the Indian Research Fund Association for preliminary investigations into beri-beri and schistosomiasis.

The work on beri-beri consisted of a general enquiry into the occurrence of the disease based on statistical and other records; enquiry into its distribution by areas, race and religion; investigation of dietary conditions in representative areas; details of rice milling and composition of rices; and enquiry into certain out-breaks which occurred during the year.

The investigation into schistosomiasis was held up for want of cases.

138. *Madras Presidency*.—959 medical institutions were at work at the end of the year, 202 were opened and 9 closed. 149,988 in-door and 9,283,281 out-door or a total of 9,433,269 patients attended institutions of classes I, III and IV. 1,017,790 patients were treated for diseases of the eye and 937,366 for diseases of the ear. Malaria was responsible for 810,615 admissions with 324 deaths, dysentery for 156,754 admissions with 570 deaths and leprosy for 13,609 admissions. In connection with the anti-leprosy campaign, with the object of training medical men to diagnose the early stages of leprosy, a Civil Surgeon was placed on special duty and District Medical Officers were instructed to open skin clinics in district headquarter hospitals. Infectious diseases were responsible for 1,335,869 admissions; the order of greatest prevalence being:—malaria 810,615; dysentery 156,754; syphilis and gonococcal infection 151,339; influenza 65,693; other infective diseases 48,639; tuberculosis of the lungs 25,629 (538 deaths). King Edward VII Government Tuberculosis Institute treated 5,488 cases of which 57·6 per cent. were suffering from tuberculosis. The Government Tuberculosis Hospital, Royapetta, returned 318 admissions. Examinations for hookworm infection were carried out and the results showed that out of 69,390 persons examined from all sections of the various social and occupational groups in all parts of the Presidency, 47,902 or 69 per cent. were found to harbour hookworms. Propaganda work was pushed with more vigour; magic lantern lectures or cinema exhibitions, etc., were conducted throughout the Presidency. 412,053 operations were performed. The total receipts, including a cash

balance of Rs. 13,689, amounted to Rs. 57,64,908 (Rs. 57,10,969 in 1924) and the expenditure to Rs. 57,50,274 (Rs. 56,95,248 in 1924).

139. *North-West Frontier Province*.—85 medical institutions were opened on December 31st, 1925; one was opened and two closed. The in and out-door attendance in these institutions other than private non-aided was 855,696 against 811,586 in 1924. (13,606 in and 842,090 out-patients against 13,203 in and 798,383 out-patients in 1924). There were 183,445 admissions for influenza and 2,498 for tubercle. 43,967 operations were performed. The income and expenditure each amounted to Rs. 3,54,456.

140. *Baluchistan*.—42 institutions were at work on December 31st, 1925; two were opened and 3 closed. The total number of cases treated in all classes of hospitals and dispensaries was 561,761 as compared with 555,170 in 1924. Malaria, though on the decrease, was still the chief cause of admission (122,089 admissions against 125,883 in 1924). There was a widespread epidemic of small-pox in Kalat and Quetta-Pishin districts and vaccination work was carried out extensively. Pneumonia caused 1,415 cases with 109 deaths; tuberculosis of the lungs 679 cases; pneumonic plague 18 fatal cases; influenza 250 cases; relapsing fever 2 cases at Pishin. 45 cases attended the civil hospital, Quetta, for anti-rabic treatment. 11,575 operations were performed. The total income and expenditure amounted to Rs. 3,34,608 (Rs. 3,26,028 in 1924) and Rs. 3,07,126 (Rs. 2,90,296 in 1924), respectively.

Indian States.

141. *Mysore State*.—There were 196 medical institutions working in Mysore State at the beginning of 1925 and 202 at the end; 6 new institutions were opened. The number of in-patients treated in the state-public, local fund and private-aided institutions was 22,696 against 23,403 in 1924. The out-patients numbered 2,193,223 as compared with 2,150,768 in 1924. 51,351 surgical operations were performed. The total income of hospitals and dispensaries from all sources and the expenditure each amounted to Rs. 10,08,372.

142. *Hyderabad State (Deccan)*, (6th October 1924 to 5th October 1925).—The number of these institutions was 146 which the Director, Medical and Sanitation Department considers hardly enough to serve a population of 12,361,076 even under normal conditions. 1,142,860 patients (11,335 in-door, 1,131,525 out-door) attended these institutions as against 1,127,973 (10,727 in-door and 1,117,246 out-door) in the previous year; in Hyderabad city alone 7,967 in-door and 355,149 out-door patients were treated as compared with 7,128 and 329,601 in the previous year. The increase was due to the incidence of malaria, plague and fevers. Malaria caused 310,548 cases and in this connection 462 lbs. of quinine and 510 lbs. of cinchona-febrifuge were issued. The following were recorded; influenza 9,438 cases, tubercle of lungs 3,104; venereal diseases 15,745. 35,455 operations were performed. 4 district centres for anti-rabic treatment were opened, *viz.*, Aurangabad, Nizamabad, Warangal and Gulbarga hospitals. The laboratory at Hyderabad continued to treat such cases.

II.—State-Special, Railway and Private Non-aided Civil Hospitals and Dispensaries.

143. The following two tables show the number of institutions open and give details of the work done in each province:—

State-Special and Railway Hospitals.

Province.	No. of Insti- tutions.	No. of in- patients.	No. of out- patients.	Total No. of patients.	No. of opera- tions.
Delhi . . . { 1924 { 1925	10 2	4,025 372	56,994 5,755	61,019 6,127	2,672 117
Bengal (excluding { 1924 Calcutta), { 1925	106 110	17,202 19,760	471,346 512,514	488,548 532,274	10,977 14,016
Calcutta . . . { 1924 { 1925	2 2	3,654 2,745	5,896 5,052	9,550 7,797	243 206
Assam . . . { 1924 { 1925	50 53	4,992 4,634	93,793 97,065	98,785 101,699	1,260 1,417
Bihar and Orissa . { 1924 { 1925	96 87	7,027 7,060	283,969 302,070	290,996 309,130	11,654 11,457
Central Provinces { 1924 { 1925	52 51	3,205 3,315	169,224 173,446	172,429 176,761	3,588 3,295
United Provinces { 1924 { 1925	117 115	27,335 16,961	397,430 428,873	424,765 445,834	9,055 9,772
Punjab . . . { 1924 { 1925	194 208	8,957 9,220	956,039 968,637	964,996 978,057	36,732 29,402
North-West Fron- { 1924 tier Province. { 1925	38 31	12,422 9,306	170,793 163,459	183,215 172,745	4,563 5,706
Baluchistan . { 1924 { 1925	10 9	2,086 1,422	81,479 68,163	83,565 69,585	1,253 750
Burma . . . { 1924 { 1925	71 72	10,679 8,908	212,825 197,121	223,504 206,029	4,491 4,214
Bombay . . . { 1924 { 1925	90 90	9,260 9,404	363,114 332,317	375,374 391,721	11,781 12,664
Madras . . . { 1924 { 1925	74 78	3,799 4,695	309,115 351,752	312,914 336,447	7,546 1,297
Total . . . { 1924 { 1925	905 908	114,643 97,802	3,575,017 3,636,404	3,689,660 3,734,206	105,765 94,813

Private Non-Aided Institutions.

Province.	No. of Insti- tutions.	Total No. of patients.	No. of opera- tions.
Bengal (excluding Calcutta)	1924 165 1925 167	1,229,183 1,267,202	22,227 19,956
Calcutta	1924 3 1925 3	62,341 62,970	3,449 4,056
Assam	1924 6 1925 6	25,577 32,428	167 263
Bihar and Orissa	1924 68 1925 64	771,043 754,491	31,949 33,749
Central Provinces	1924 48 1925 49	196,561 200,731	4,964 5,007
United Provinces	1924 81 1925 83	510,706 535,381	11,861 14,051
Punjab	1924 10 1925 8	112,924 95,650	3,990 4,386
North-West Frontier Province	1924 5 1925 6	38,242 50,002	4,778 6,911
Baluchistan	1924 3 1925 3	43,739 45,059	861 692
Bombay	1924 148 1925 148	1,167,871 912,433	48,628 35,006
Madras	1924 64 1925 64	357,937 405,664	20,115 19,869
Total	1924 601 1925 601	4,516,124 4,362,011	152,989 148,946

NOTE.—As most of the provinces do not now furnish the numbers of in and out-patients separately, columns for them have been omitted.

III.—Mental Hospitals.

144. *General.*—The following table gives the number of such hospitals, the total population of these institutions and the number discharged, cured and died during the year 1925. The totals for all-India are given for the years 1924 and 1925.

Province.	No. of Mental Hospitals.	Admitted and re-admitted, during the year.	TOTAL HOSPITAL POPULATION.			Discharged cured.		Daily average Strength.	Daily average Sick.	Criminal Lunatics.		
			Males.	Females.	Total.	Discharged.	Died.					
Bengal Presidency	*4	207	1,039	162	1,201	92	53	914.19	72.03	564		
Assam	1	47	392	94	486	16	29	439.44	36.69	227		
Bihar and Orissa.	2	1,331	1,425	218	1,643	23	22	968.57	61.62	725		
United Provinces	3	326	1,250	298	1,548	143	144	1,220.37	182.11	276		
Punjab	1	292	911	243	1,154	122	125	864.54	38.47	196		
Central Provinces	1	90	369	96	465	41	21	384.81	18.02	124		
Bombay Presidency.	6	537	1,546	490	2,036	297	107	1,544.2	70.4	256		
Madras Presidency	3	353	990	313	1,303	165	63	980.73	139.01	177		
Burma	2	214	982	174	1,156	81	81	954.83	81.15	503		
Total	{	1924	22	2,157	7,771	1,941	9,712	1,917	676	7,635.94	738.68	2,501
		1925	23	3,397	8,904	2,088	0,992	980	648	8,291.68	707.50	3,048

* Including Bhowanipur Mental Observation Ward.

145. *Bengal*.—On the transfer of patients to the Indian mental hospital at Ranchi the mental hospitals at Berhampore and Dacca were closed. All certified mental patients are now sent to Ranchi where the climate is better and amenities of hospital life and the facilities for treatment are in advance of what was possible in the old asylums in Bengal.

There was no overcrowding in any of the hospitals. The general health of the patients was better than in 1924, epidemics were absent. The daily average sick was 72·03 as compared with 89·01 in 1924.

The criminal population of the mental hospitals amounted to 564 (569 in 1924).

146. *Bihar and Orissa*.—Arrangements for the reception of patients in the Indian mental hospital, Kanke, were completed by August 31st, 1925. The health of the patients was good, except for some malaria among patients transferred from Berhampore and Dacca. There was no epidemic disease. The Patna mental hospital was closed on the 18th September 1925.

The population in the hospital at Kanke on December 31st, 1925, was 1,259 (1,100 males and 159 females); the daily average strength was 674·96. An average of 39·05 patients was treated in the hospital infirmaries. Malaria with 106 admissions was the chief cause of sickness.

Patna mental hospital on January 1st, 1925 had 312 inmates, the daily average strength, including observation cases, being 313·61. The general health was satisfactory, and the number of recoveries was 23.

147. *United Provinces*.—In the three mental hospitals in the province out of a population of 1,548 the number discharged as cured was 143, and 144 deaths occurred.

148. *Punjab*.—1,154 patients were treated in the Punjab mental hospital, Lahore, during 1925, the daily average strength being 864·54. There was less overcrowding and 122 were discharged cured. The death rate was 14·23 (11·31 per cent. in 1924). Dysentery and diarrhœa due to the excessive prevalence of flies were the chief diseases (63 deaths). Tuberculosis accounted for 16 deaths. There was no epidemic disease.

The new criminal section was not used for want of the requisite staff. A water carriage system was suggested to replace the existing faulty trenching system. The types of mental illness amongst the admissions were mania (82 admissions), dementia praecox (37 admissions), maniac depressive insanity (57 admissions), melancholia (24 admissions), acute confusional insanity (24 admissions), toxic insanity (40 admissions), mental deficiency (21 admissions), paranoia (2 admissions), secondary dementia (4 admissions), and senile insanity (1 admission).

149. *Bombay Presidency*.—The population of the mental hospitals in Bombay Presidency was 2,036. Admissions (including readmissions) numbered 537 (535 in 1924); the daily average strength was 1,544·2; the daily average sick treated in hospital was 70·4. Though plague was epidemic in Ratnagiri, the infection was excluded by general sanitary measures and inoculation. 107 deaths, 6·9 per cent. of the average strength, were reported. The chief causes were dysentery and diarrhœa (32), anæmia (11), tuberculosis (8), diseases of the heart (8) and pneumonia (5). The mortality at the mental hospitals at Ratnagiri and

Naupada increased due to deaths among the old, the infirm and among the debilitated. The chief types of insanity treated were mania 698, melancholia 419, dementia 232, delusional insanity 79, insanity caused by *cannabis indica* or its preparations 104 and idiocy 45.

Water supply was good and sufficient. At Naupada the block for 24 female patients and the hospital ward for 16 beds were completed and taken into use.

150. *Central Provinces*.—Of 465 lunatics who were under confinement in the mental hospital at Nagpur, 41 were discharged cured. Of the new admissions, 7·22 per cent. were found to be infected with ankylostomiasis (17·05 in 1924). Treatments by Manson's mixture was carried out at half-yearly intervals. Of 400 patients' stools examined, ankylostomes were detected in 46 cases. Other helminths found were:—*ascaris lumbricoides* 36, *trichiurus trichiura* 20, *oxyuris vermicularis* 3, *strongyloides stercoralis* 7. 15 patients were positive for *balantidium coli* of whom 3 showed symptoms of dysentery. 13 criminal lunatics were admitted.

Mania (69 admissions) was the commonest type of insanity followed by melancholia (14 admissions). Plans for 12 blocks of two rooms each to provide accommodation for paying patients were under consideration.

151. *Assam*.—Out of a population of 486 there were 173 admissions to hospital, the daily average sick was 36·39. Tuberculosis, dysentery and malaria were the chief diseases. 21·18 per cent. were admitted in bad health, 55·32 per cent. in indifferent health, and 23·40 per cent. in good health. Dysentery and tuberculosis of the lung accounted for 10 and 7 deaths, respectively.

152. *Madras Presidency*.—Of a total population of the three mental hospitals, *viz.*, 1,303, 165 were cured and 42 improved. In the mental hospital at Madras, the accommodation for Indian civilian males and females remained insufficient. Steps were being taken to improve this. The sanitation in all the three hospitals was satisfactory, the dry earth system was in vogue both in Calicut and Waltair hospitals. The drainage system was satisfactory at Waltair and Calicut. Water supply to the Madras hospital was inadequate. There was an epidemic of chicken-pox at the mental hospital, Madras; but the epidemic soon subsided when prompt measures were taken.

Among the causes of insanity mental stress, mental instability and heredity accounted for the largest number of admissions and the principle types were mania 258, dementia præcox 157, dementia secondary or terminal 133, melancholia (other forms) 115, insanity due to *cannabis indica* 99, insanity (circular and alternating) 95, delusional insanity 77, mania (epilepsy) 50 and insanity due to alcohol 42. Tubercle of the lungs, respiratory and circulatory diseases were the chief causes of mortality.

153. *Burma*.—The population of the two asylums in Burma was 1,156. The general health of the inmates of the Rangoon and Minbu hospitals was satisfactory and no epidemic was reported. Vaccinations and anti-cholera inoculations were carried out. The deaths, excluding 5 amongst observation cases, numbered 81—the chief causes being tuberculosis of lung, cerebral degeneration and pneumonia. The percentage of deaths to daily average strength was 8·48.

IV.—Medical Colleges.

Bombay.

154. *Grant Medical College.*—The number of students on the rolls of the college during the year 1925-26 was 678, including 123 new students.

The following statement shows the number of candidates, who presented themselves for the various examinations and the number who passed:—

Examinations.	Number of candidates.	PASSED.	
		Males.	Females.
M. B. B. S. :—			
Intermediate. { Old Regulations	499	109	11
{ New "	176	76	4
Final . . . { Part I	581	170	9
{ Part II	571	189	14
M. D. :—			
Branch I.—Medicine	4	...	2
Branch II.—Midwifery	4	...	...
M. S. :—			
{ Part I	6	...	3
{ Part II	7	...	2

No military pupils were under training in the college.

Madras.

155. *Madras Medical College.*—There were 622 students on the rolls of the college distributed as follows:—

Class.	Males.	Females.	Total.
M. B. B. S.	303	35	338
I. M. S.	114	11	125
B. S. Sc.	5	...	5
Apothecary	22	17	39
Chemist and Druggist Class	2	...	2
Junior grade Health Officers Class	7	...	7
Sanitary Inspector Class	64	...	64
Health Inspectors deputed for quinquennial training	24	...	24
Sanitary Inspectors deputed for quinquennial training	13	...	13
Medical Subordinate for Bio-Chemistry training	3	...	3
Medical Subordinate for dental training	2	...	2
Total	559	63	622

Seven military pupils were admitted during the year.

The following table details the number of students who sat for the university examination and the number who passed :—

Examinations.	Number examined.	Number passed.
L. M. S. :—		
1st Examination	1	1
2nd Examination	63	18
3rd Examination	24	31
Final Examination	51	29
M. B. B. S. :—		
1st Examination	181	74
2nd Examination	138	54
3rd Examination	66	53
Final M. B. B. S.	107	43
Total .	631	293

One military pupil qualified for the M. B. B. S. and one for the L. M. S. Degree, one qualified for part I of the final M. B. examination and one passed in each of the first and third M. B. examinations.

Punjab.

156. *King Edward Medical College, Lahore.*—The total number of students on the rolls of the college was 512.

Government scholarship holders :—

Punjab	10
North-West Frontier Province	4
Non-Government scholarships	35
Other students	8
Students in receipt of special military scholarships	4

TOTAL . 61

The following statement gives the number of students who appeared for the university examinations and the number who passed:—

Examinations.	Number of candidates.	Passed.
1st M. B. B. S.	114	57
1st M. B. B. S. (Supplementary)	20	14
2nd M. B. B. S.	91	60
2nd M. B. B. S. (Supplementary)	20	18
Final M. B. B. S.	140	81
M. D.	2	...

Bengal.

157. (a) *Calcutta Medical College.*—During the year there were 1,037 male, 13 female and 9 military students on the rolls of the college, or a total of 1,059 students.

The following statement shows the number of students who appeared for the university examinations and the number who passed:—

Examinations.	MALE.		FEMALE.	
	Number appeared.	Number passed.	Number appeared.	Number passed.
Intermediate Membership, State Medical Faculty .	2	1	...	...
Final Membership, State Medical Faculty . .	8	1	...	...
Preliminary Scientific M. B.	192	138	2	2
First M. B.	382	146	5	3
Final M. B.	277	103	5	...
Total .	811	389	12	5

(b) *Carmichael Medical College, Belgachia*.—There were 703 students on the rolls of the college. Applications for admission numbered 778 against 944 in the previous year. 84 of the former were admitted.

The statement shows the number of students who appeared for the examinations and the number who passed:—

Examinations.	Number appeared.	Number passed.
Preliminary Scientific M. B. Examination	82	58
First M. B.	178	104
Final M. B.	224	65
Intermediate Membership, State Medical Faculty	1	1
Final Membership, State Medical Faculty	4	2

United Provinces.

158. *King George's Medical College, Lucknow*.—During the year there were 286 students on the rolls of the college, of whom 2 were females.

The following statement shows the number of students who appeared for the university examinations and the number who passed:—

Examinations.	Number appeared.	Number passed.
First M. B. B. S., Part I	54	32
First M. B. B. S., Part II	56	36
Final M. B. B. S., Part I	36	24
Final M. B. B. S., Part II	46	25
M. S. . . . .	...	...
M. D.	1	1
D. P. H.	9	8
Supplementary Final M. B. B. S., Part I	14	8
Supplementary Final M. B. B. S., Part II	23	18

Delhi Province.

159. *Lady Hardinge's Medical College, New Delhi.*—There were 105 students in residence at the beginning of the session.

The examination results are shown below:—

Examinations.	Candidates appeared.	Candidates passed.
Intermediate Science	19	13
First M. B. B. S.	16	7
2nd M. B. B. S.	9	4
Final M. B. B. S.:—		
Part A	21	10
Part B	21	12

Bihar and Orissa.

160. *Prince of Wales' Medical College, Patna.*—This college which has been evolved out of the Patna Temple medical school, established in 1874, meets the increasing demand of higher medical education in this province. It was founded to commemorate the visit of His Royal Highness the Prince of Wales to Patna in the year 1921.

The number of students on the rolls of the college during the year was 31.

Out of 30 candidates, 22 passed in the first M. B. B. S. examination; and out of 9 candidates 8 passed in the supplementary first M. B. B. S. examination.

V. — Medical Schools.

There were 23 medical schools distributed as follows:—

Bengal 5, Madras 7, Bombay 3, United Provinces 2, Punjab 2, Burma 1, Bihar and Orissa 2, Assam 1.

Bengal.

161. (a) *Campbell Medical School, Calcutta.*—There was a total of 631 students on the school rolls, of whom 611 were males and 20 females.

The following table gives the number of students who appeared for examinations:—

Examinations.	NUMBER APPEARED.		NUMBER PASSED.	
	Males.	Females.	Males.	Females.
Compoundership Examination	209	...	152	...
Licentiate Examination of the State Medical Faculty—				
Final Examination	162	4	95	1
Intermediate	155	1	113	1
Primary	90	2	78	2

(b) *Dacca Medical School*.—There was 568 male and 17 female students on the rolls of the school, making a total of 585.

The following table shows the results of the school examinations:—

Examinations.	NUMBER APPEARED.		NUMBER PASSED.	
	Males.	Females.	Males.	Females.
Compoundership Examination	130	...	97	...
Licentiate Examination of the State Medical Faculty—				
Final Examination	144	2	75	...
Intermediate	154	5	117	3
Primary	56	4	42	2

(c) *Ronaldshay Medical School, Burdwan*.—There were 220 students on the rolls of the school during the year.

The following table shows the results of the school examinations:—

Examinations.	Number appeared.	Number passed.
Licentiate Examination of the State Medical Faculty—		
Final Examination	60	25
Intermediate	71	46
Primary	32	27

(d) *Lytton Medical School, Mymensingh*.—The number of students on the school rolls was 117.

The following table shows the results of the school examinations:—

Examinations.	Number appeared.	Number passed.
Compoundership Examination	55	51
Licentiate Examination of the State Medical Faculty—		
Intermediate	26	13
Primary	38	32

(e) *Calcutta School of Tropical Medicine and Hygiene*.—In the last examination for the diploma of tropical medicine 28 students entered, of whom 20 (one a female) passed. 21 students attended the short course of whom 15 passed.

In the Calcutta university examination for the Diploma in Public Health 8 candidates appeared of whom 7 passed.

Madras.

162. (a) *Medical School, Royapuram*.—There are 423 pupils on the rolls. 77 students appeared for the 1st year examination and 42 passed. 88 students appeared for the 2nd year examination and 42 passed. 111 students appeared for the 3rd year examination and 78 passed, and out of 229 final year students 117 were successful.

(b) *Prince of Wales' Medical School, Tanjore*.—There were 221 pupils on the rolls.

Of 53 "final year," 63 "third year," 75 "2nd year" and 50 "first year" pupils who appeared for the Board examinations 19, 27, 52 and 28 of each respective class passed the examination.

(c) *Medical School, Vizagapatam*.—There were 219 pupils on the rolls of the school. Of 91 final year, 49 third year, 74 second year and 50 first year pupils, who appeared for the Board examinations, 26, 25, 36 and 23 of each respective class passed the examinations.

(d) *Medical School, Coimbatore*.—There were 68 students on the rolls of the school. 40 students appeared for the 1st year examination and 28 passed. 31 students appeared for the 2nd year examination and 21 passed.

(e) *Medical School, Madura*.—During the year there were 74 pupils on the rolls of the school. 42 pupils appeared for the final examination and 17 passed. 34 pupils appeared for the third year examination and 23 passed.

(f) *Missionary Medical School for Women, Vellore*.—There were 77 students on the rolls of the school. Of 22 final year, 13 3rd year, 15 2nd year and 23 1st year pupils, who appeared for the examinations 3, 7, 5 and 11 of each respective class passed the examinations.

(g) *Lady Willingdon Medical School for Women, Madras*.—The number of students on the rolls was 60. 22 students appeared for the first year examination, of whom 13 passed. 23 students appeared for the second year examination, of whom 10 passed. 12 students appeared for the third year examination and 11 passed.

Bombay.

163. (a) *Byramjee Jeejeebhoy Medical School, Poona*.—The average number of students on the school rolls during the year was 253. 143 students appeared at the final L. C. P. S. examination in May and November 1925, of whom 43 passed.

(b) *Byramjee Jeejeebhoy Medical School, Ahmedabad*.—There were 152 students on the rolls of the school. 126 students appeared at the final L. C. P. S. examination, of whom 27 passed.

(c) *Medical School, Hyderabad (Sind)*.—Out of 47 candidates who appeared for the final L. C. P. and S. examination, 7 remained absent

and 7 passed. 8 students appeared for the third year examination, of whom 3 passed. 27 students appeared for the first L. C. P. and S. examination and 6 passed.

United Provinces.

164. (a) *Medical School, Agra*.—There were 325 students on the school rolls during the year. Of these 74 belonged to the military class.

99 students appeared at the final qualifying examination for diploma and 80 passed. 70 students appeared at the junior qualifying examination and 47 passed.

The hostel accommodation continued to prove insufficient; and 114 students were accommodated in two rented houses in the city.

(b) *Agra Women's Medical School*.—There were 64 students on the school rolls during the year. 9 students appeared for the final qualifying examination, of whom 8 passed. 19 students appeared for the junior examination, of whom 12 passed.

Punjab.

165. (a) *Medical School, Amritsar*.—The number of students on the rolls was 354; of these 87 belonged to the Indian military pupil class. 118 students appeared for the final L. S. M. F. diploma and 87 passed.

(b) *Ludhiana Medical School and College for Women*.—There were 74 students on the rolls of the school. 77 per cent. of the candidates sent up for the final examination were successful.

Burma.

166. *Government Medical School, Rangoon*.—There were 200 students on the rolls of the school. 51 students appeared for the final diploma examination and 44 passed, of whom, two were females. 33 students appeared for the junior (second year examination) for diploma and 28 passed. of these one was female.

Bihar and Orissa.

167. (a) *Medical School, Darbhanga*.—There were 259 students on the rolls of whom 4 were females. 58 candidates appeared at the final examination for the M. P. L. diploma and 33 passed. 69 students appeared for the junior (2nd year) primary examination, of whom 40 passed. In the examination for the compounder class 49 students appeared for the examination, of these 35 passed.

(b) *Orissa Medical School, Cuttack*.—There were 195 male and 1 female students on the rolls during the year.

31 students appeared for the final examination for the M. P. L. diploma, of these 15 passed. 45 students appeared for the junior primary examination, of whom 29 passed. In addition 30 candidates

appeared for the examination in physics and chemistry, of whom 20 passed.

33 students appeared for the compoundership examination, of whom 28 passed.

Assam.

168. *Berry-White Medical School, Dibrugarh.*—There were 235 students on the rolls during the year. 42 students out of 64 passed the final qualifying examination, and 33 students out of 45 the primary examination.

111 students appeared at the compoundership examination and 75 passed.

The X-Ray Institute, Dehra Dun.

169. (a) *Radio-diagnosis.*—During the year, 1868 examinations were carried out. The vast majority of the patients so examined were Government servants, many of whom were sent from all parts of India.

(b) *Radio and Electro-therapy.*—5,034 treatments were given to patients, most of whom were in Government employ.

This Institute does all X-Ray and electro-therapeutic work not only for the local Brigade but for military patients sent for diagnosis and treatment from other military areas. They are housed, while at Dehra Dun, in the local Indian Station Hospital.

(c) *Training in X-Ray and Radiology, Electro-therapy.*—62 students attended X-Ray classes during the year. Most were in Government service, military or civil, i.e., officers of the Indian Medical Service and Royal Army Medical Corps, and assistant and sub-assistant surgeons; but there were also 4 students from Indian States, one from Lahore Veterinary college and 2 private practitioners.

Of the 62 students, five obtained proficiency certificates, 45 passed and 12 failed.

In view of the great progress in X-Ray science in recent years, the classes need some modification, and it is thought that a preliminary physics course, on the lines of the D. M. R. E. Cambridge, is essential.

The X-Ray installations at Delhi and Simla have continued to work in a very satisfactory manner.

The Countess of Dufferin Fund.

170. 256 female students were studying for degrees in different medical colleges. 26 under-graduates in medical colleges at Delhi, Madras, Bombay and Calcutta were in receipt of Dufferin Fund scholarships or stipends from trust funds administered by the Countess of Dufferin's Fund.

The extent of the work done by the hospitals may be estimated by the fact that 30,456 in-patients and 384,242 out-patients were treated under Women's Medical Service officers, and amongst these 7,289 maternity cases. 24,231 operations were performed under chloroform, including 979 abdominal sections.

SECTION VII.

JAILS OF INDIA.

Part I.—Population, Sickness and Mortality Rates.

171. The average jail population, including the Andamans, during 1925 was 126,475 with a mean (1915-1924) of 124,241, as against 126,664 with a mean (1914-1923) of 122,986. Exclusive of the Andamans, the mean population shows an increase from 111,251 to 112,852. During 1925 Assam, Bengal, Bihar and Orissa, Punjab, Central Provinces, Bombay and Madras have returned decreases in their average strengths; of those provinces showing an increase Burma attributes it to the fact that crime is on the increase or that more cases are detected and punished, whilst the United Provinces ascribe it to the reduction in the number of convicts released, particularly under the remission rules, to the transportation convicts being detained in the jails in the province and to the prolonged detention of large gangs of undertrials in several jails.

172. The constantly sick rate (23) further declined, the rates for 1924 and the decennial mean (1915-1924) being 25 and 32, respectively. The admission to hospital rate was 600·7 against 736·1 in 1924 and the decennial mean (admission) was 784·6 against 775·6 during the decennium ending 1923. Excluding the Andamans, the rate was 599·5, as compared with 730·2 in the previous year and a decennial mean in 1915-24 of 724·3. The constantly sick rates showed decreases as compared with the decennial mean in all the provinces, Andamans included, except the United Provinces and North-West Frontier Province. In the United Provinces the rate (21) was the same as the decennial mean, while in North-West Frontier Province it was 35 against a decennial mean of 29. Burma and Assam each recorded 5 below the mean, Bengal 17, Bihar and Orissa 22, Punjab 4, Central Provinces 7, Bombay 8, and Madras 3 below the mean.

173. The admission rates (all causes) were above the mean in Burma, and North-West Frontier Province and in excess of the rate for 1924 in Assam, Punjab, North-West Frontier Province and Madras. They were below the mean in Assam, Bengal, Bihar and Orissa, United Provinces, Punjab, Central Provinces, Bombay, Madras and the Andamans, and below the rate for 1924 in Burma, Bengal, Bihar and Orissa. United Provinces, Punjab, Central Provinces, Bombay, Madras and the Andamans. The decreases in the rates for Bengal, Bihar and Orissa, United Provinces, Central Provinces and the Andamans are striking.

174. The death rate, which, excluding the Andamans, was 12·93 and including them 13·54, was lower than that of the previous year (14·42 and 15·34) and of the decennial mean (21·61 and 22·84). The death rate exceeded the decennial mean in Assam only; it exceeded that for 1924 in Assam, Central Provinces, Bombay and Madras. The decrease in Bihar and Orissa and North-West Frontier Province was remarkable.

The rates for Burma, Bengal, Bihar and Orissa, United Provinces, Punjab, North-West Frontier Province and the Andamans were below those of the previous year and the decennial mean. In Assam the increase was attributed to prisoners having been received in very poor health; in the Central Provinces the slight increase shown occurred in Raipur jail and was due to admissions in indifferent health; in Bombay the decrease was attributed to an epidemic of cerebro-spinal meningitis in Hyderabad central prison; in Madras the increase was thought to be the result of a fall in the prison population.

The year was comparatively healthy and the sickness and mortality figures are satisfactory.

Part II.—Causes of sickness and Mortality.

175. The principal causes of sickness in order of priority were malaria (196·7); abscess, ulcer and boil (40·2); dysentery (27·6); influenza (25·8); respiratory diseases (24·8); diarrhoea (23·1); pneumonia (12·2); pyrexia of uncertain origin (8·9); tubercle of the lungs (7·1); anæmia and debility (6·1). The order of incidence was much the same as last year. They all show decreases—some large decreases—except influenza the rate for which nearly trebled. Bihar and Orissa contributed largely to this increase. The principal causes of death in order of priority were pneumonia (2·65); tubercle of the lungs (2·36); dysentery (1·34); malaria (·85), respiratory diseases (·46); enteric fever (·28); and diarrhoea (·25). All these have decreased since the previous year.

Infectious disease was kept well under control and epidemics remained practically absent.

176. *Influenza*.—3,262 admissions with 38 deaths were recorded against 1,244 admissions and 10 deaths in 1924. Bihar and Orissa, Burma, Madras, Bengal, United Provinces and Bombay suffered most with 547, 522, 519, 443, 425 and 410 admissions, respectively. The disease was absent in the Andamans.

177. *Cholera*.—There were 45 admissions with 28 deaths against 22 admissions with 14 deaths in 1924. An outbreak in the Rawalpindi jail with 39 admissions and 22 deaths was responsible for the bulk of these.

178. *Small-pox*.—There were 76 admissions and 8 deaths against 32 admissions and 1 death in 1924, 32 of these with 4 deaths occurred in the United Provinces.

179. *Dysentery* caused 3,485 admissions with 169 deaths against 5,226 admissions with 212 deaths in 1924. Bengal suffered most heavily with 642 admissions, followed by Madras with 624, Andamans 409, United Provinces 388, Burma 363, Bombay 334, and Bihar and Orissa 308. 46 of the deaths were in Madras, 41 in the Andamans, 23 each in Bengal and United Provinces.

180. *Diarrhoea*.—2,920 admissions with 31 deaths were reported against 3,445 admissions with 35 deaths during 1924. The combined tabular statement for dysentery and diarrhoea which has been a feature of the last three reports has been continued.

Table showing ratios for *Dysentery and Diarrhoea combined*.

Provinces	ADMISSION RATE.			DEATH RATE.		
	Decennial mean (1915-24.)	1924.	1925.	Decennial mean (1915-24.)	1924.	1925.
Burma	36.7	35.1	24.0	2.09	.73	.75
Assam	201.7	96.9	87.0	3.11	4.74	4.00
Bengal Presidency	270.3	185.1	145.4	4.90	2.91	2.38
Bihar and Orissa	286.5	240.2	140.6	10.48	3.50	1.11
United Provinces	48.2	34.9	25.6	2.80	1.43	.95
Punjab	57.1	31.3	30.3	1.75	.71	.83
North-West Frontier Province	60.2	44.5	52.9	3.35	1.68	1.47
Central Provinces	64.2	59.4	33.8	4.11	.80	.80
Bombay Presidency	79.5	53.2	54.7	1.62	1.02	.75
Madras	52.6	68.5	39.2	4.40	2.25	2.80
Andamans	107.5	70.7	61.2	5.87	6.91	5.14

From this table it would appear that the admission rate was well below the decennial mean in all the provinces, and below the 1924 figures everywhere except in North-West Frontier Province and Bombay Presidency, the increase being very noticeable in the former, but very slight in the latter. The decrease is considerable in Bihar and Orissa, Bengal Presidency, Madras, Central Provinces and Burma. The death rate is well below the decennial mean in all provinces except Assam, and below the 1924 figures everywhere except in Burma, Punjab, and Madras where the increases are slight.

181. *Malaria* caused 24,882 admissions and 107 deaths as against 30,261 admissions and 150 deaths in the previous year. Excluding the Andamans, the admission rate (191.2), was lower than that for the previous year (228.9), but exceeded the decennial mean (187.7). Including the Andamans, it was below both that for 1924 and the decennial mean. The highest rates were reported from North-West Frontier Province (480.1), Punjab (443.0), Andamans (278.9) and Bengal (270.9). In the Punjab the rate fell from 486.7 in 1924 to 443.0. The total mortality rate (.85) is lower than that of 1924 (1.18) and of the decennial average (1.05). It varied between 2.04 in the Punjab (2.68 in 1924), 2.00 in Assam (1.42 in 1924), 1.88 in the Andamans (4.33 in 1924) and .18 (the lowest) in Madras.

The decrease in the Andamans was attributed to the administration of quinine before the onset of the rains to all convicts with enlarged spleens or malaria cachexia.

182. *Pneumonia* caused 1,546 admissions with 335 deaths as against 1,399 admissions with 333 deaths in 1924. The mortality rate (2.65) still continues to be the highest. Assam had the highest rate (6.00) followed by the Punjab (4.75), Bombay (3.59), Andamans (3.26), United Provinces (3.18), and North-West Frontier Province (2.06). Excluding the Andamans, the rate was 2.61 as against 2.59 in 1924 and 3.31, the decennial average.

183. *Tubercle of the Lungs*.—Excluding the Andamans, 862 admissions with 283 deaths were registered as against 997 admissions and 326

deaths in 1924. The mortality rate was 2·39 as against 2·57 in 1924 and 3·09 in the decennium 1915-24. The death rates varied between 5·51 (the highest) in Assam and ·80 (the lowest) in the Central Provinces. Other provinces recorded rates as follows: Madras 3·76, Punjab 2·49, Burma 2·36, United Provinces 2·26, Bengal 2·21, Andamans 2·01, North-West Frontier Province 1·77, Bihar and Orissa 1·66 and Bombay 1·42.

Madras.—The scheme for the conversion of the Indian Station Hospital at Bellary into a tubercular jail with up-to-date sanatorium treatment has been sanctioned. Bellary with an altitude of 1,500 feet above sea level and an annual rainfall of about 15 inches should be well suited to this disease. In time this will lead to the evacuation of the special wards at Trichinopoly and Bellary.

Bombay.—As far as possible, prisoners are transferred from other jails to the special wards at all the central prisons and the district jail at Karachi.

Bengal.—Cases in Western Bengal prisoners are treated at Suri jail hospital; those in Eastern Bengal prisoners at Comilla jail hospital.

North-West Frontier Province transfers tubercle cases to Shahpur in the Punjab.

Assam.—Gauhati jail is now equipped with a ward for tubercular cases. Tezpur jail is also to be provided with one.

Burma.—Myingyan central jail has a special tubercular ward with the provision of additional accommodation for 50 prisoners. This jail will be well equipped to deal with the disease.

Andamans.—22 cases were repatriated to Indian jails. Those unlikely to improve by transfer were kept, the end being described generally as a rapid one. During the monsoons (May to October) 16 deaths were recorded.

Part III.—Weight of Prisoners. Health of Prisoners as evidenced by weight.

184. The following tabular statement shows in percentages the condition of prisoners on discharge:—

Province.	Gained weight.	Stationary.	Lost weight.
Madras Presidency	72·8	18·6	8·6
Bombay Presidency	47·7	30·2	22·1
Bihar and Orissa	62·82	22·70	14·48
Bengal Presidency	50·4	30·9	18·7
United Provinces	65·36	27·35	7·29
Punjab	43·8	41·2	15·0
Central Provinces	63·0	27·0	10·0
Assam	54·73	24·03	21·21
North-West Frontier Province	49·68	24·03	26·26
Burma	61·08	26·07	12·85
Andamans	20·48	4·21	75·30

The percentage gaining weight rose in Bihar and Orissa, Bengal, United Provinces, Central Provinces, North-West Frontier Province and

Burma and fell slightly in Madras, Bombay, Punjab and Assam. The Andamans figures now introduced for the first time show a heavy percentage loss in weight in fact almost three times the percentage loss of the next on the list.

Part IV.—Special Remarks on Provinces.

185. *Madras*.—This report is again a very full and informative one, the most noticeable features of which are the great attention being paid to sanitation, especially to the provision of good water supplies, the money being spent on this, the development of the Borstal system, with the passing of the Madras Borstal Schools Act, a further reduction of sick and mortality ratios, and the amount of tuberculosis of lungs.

Though accommodation increased by 28, temporary overcrowding occurred and was met by improvisation in tents and workshops while the Indian Station Hospital and Plassey barracks at Alipuram were taken over. The daily average was reduced by 1,383.

Dietary charges rose in cost per head because of the rise in prices and the substitution of rice for “ragi”; so also did hospital charges, while sanitation and clothing charges were reduced. The total cost per head rose to Rs. 118-2-5 from Rs. 112-1-6.

Vital statistics were again very satisfactory, the daily average sick (289·70) and total deaths (245) both showing a decrease though the ratio per mille of the former was higher due to a fall in the population. Of the 245 deaths 110 occurred in Mapilla rebellion prisoners, Alipuram had 95, Trichinopoly 31, Salem 17, Vellore 11, Cannanore and Rajamundry 10, Coimbatore and Bellary 9, Vizagapatam 8. The death rate in central jails was 14·03, in district jails 8·51, and in subsidiary jails 7·47 against 13·30, 6·99, and 7·38 in 1924. It is obvious that till the Mapilla prisoners have been discharged the figures cannot represent the normal jail situation. Of central jails Alipuram had the highest death rate (22·87) followed by Trichinopoly (18·26) and Vizagapatam (13·03).

21 sick prisoners repatriated from the Andamans (45 in 1924) showed 5 pulmonary tubercle cases, 6 malaria, 2 asthma, and 2 mental, 12 being admitted to hospital on arrival.

Cholera was absent.

Dysentery showed a large drop in admissions (37·12) though the deaths (45) increased. The completion of the Alipuram water project at a cost of 1½ lakhs is already showing its value and the Inspector-General is to be congratulated on it. A Guindy unit again assisted in investigating the carrier aspect of the Penitentiary outbreak which coincided with a city epidemic. Malaria decreased without prophylactic quinine. Enteric fever mortality increased to 39 from 8, largely due to a supposed water outbreak at Trichinopoly central jail. Ankylostomiasis examinations of new admissions were continued everywhere and showed 49·26 per cent. as being positive, the Mapillas being the worst. Lung tubercle is widespread and deaths increased, *e.g.*, Alipuram 21, Trichinopoly 9, Cannanore 6, etc. When the old Bellary Indian Station Hospital is opened, this should help to improve matters.

Sanitation in all its branches has received the closest attention and the universality of automatic chlorination where water supplies are unreliable in the hot weather is a very sound policy. I consider all money

spent on good water supply, artesian wells, and on chlorination as the soundest of investments. The report shows again the enlightened policy which we have come to associate with the direction of the Madras jails.

186. *Bombay*.—The bug bear of overcrowding, at times temporary, at other times more permanent, had to be faced in the Common Prison, Bombay, in the central jails of Ahmedabad and Hyderabad, in the district jails of Karachi and Sukkur, and in the Sind Gang. Though the Nasik, Yeravda, and Arthur Road building programmes near completion and plans are ready for extensions at Hyderabad and Karachi, the fact remains that Sind jails accommodation is about 50 per cent. below requirements. There is little doubt that this is reflected in the pneumonia figures which have risen from 150 to 270 as 72 per cent. of the admissions and 60 per cent. of the deaths occurred in Sind (Sukkur being worst) although Sind contains only 30 per cent. of the total provincial jail population. This matter is therefore urgent even though the average daily population has fallen by 142.

The admissions to hospital (7,760) and average daily sick (204·3) both decreased though the deaths (137) and death ratio (11·1) both rose, due to an outbreak of cerebro-spinal fever with 9 deaths in the Hyderabad central jail which alone had a death rate exceeding 20 per mille.

One case of cholera at Visapur, no plague, 2 big outbreaks of influenza at Sukkur and Hyderabad with several minor ones, 2 cases of small-pox at Belgaum and Hyderabad, and 11 cases of cerebro-spinal fever at Hyderabad comprised the infectious diseases. Lung tuberculosis diminished to 54 cases from 68 cases. Malaria decreased but was bad at the Common prison, Bombay, which is now closed; prophylaxis was universal. Pneumonia has been referred to.

The total cost per head fell to Rs. 153-6-1 from Rs. 158-9-2 and the costs of both dietary and of hospitals were reduced. The diet remained unchanged. Works grants were again large (Rs. 9,45,300). This is a very informative report.

187. *Bengal*.—No overcrowding was reported and the daily average population decreased. Malda district jail was made a subjail, the reconstruction of this juvenile jail which will be run on the Borstal system was ensured by a grant of Rs. 45,000; criminal lunatics were sent to the new central mental hospital at Kanke in Bihar and Orissa, and up-country prisoners were given up-country diets. The development of physical training amongst juveniles by arranging badminton, hockey, swimming, fire parades as well as technical instruction would appear to be all to the good.

Admission to hospital rate per mille showed a steady drop from 1920 when it was 1318·8 to 955·5 in 1925. In the same way both daily average sick rate per mille and death rate per mille have receded from 52·9 and 20·9 in 1920 to 34·0 and 13·0 in 1925. These are very satisfactory figures. The most noticeable disease features, however, of the Bengal year were the epidemics of small-pox and malaria which reached their maximum in May and November, respectively, in the civil population. By vaccination of all staff and prisoners on admission the jails were kept free, while malaria was controlled by prophylactic quinine and nets. This is worth dwelling upon as an object lesson and shows excellent preventive work to which the Inspector-General pays tribute.

Further, cholera was absent, malaria, pneumonia, dysentery and diarrhoea all decreased, and although lung tuberculosis rose, the general death rate per mille was 13.0. Dysentery was worst at Comilla, and bad at Khulna, Barisal, Rangpur, and Jalpaiguri; while malaria was bad at Dacca, Rangpur, Jessore, Rajshahi, Faridpur, Comilla, and Khulna.

General administration costs increased as did also dietary, hospital, clothing and sanitary charges, due to the substitution of rice for paddy, the high price of food grains and the issue of an extra kurta and gamcha.

Works expenditure (original and repairs) amounted to Rs. 3,32,258 and consisted of water improvements at Alipore and Midnapore central jails, new subjails at Patuakhali and Alipore Duars, and sub jail extensions at Asansol, Naogaon and Gaibandha.

188. *Bihar and Orissa*.—Accommodation, now 10,865, increased by 20 and the daily average population which dropped by 49 was 6227.1. The juvenile jail appears to be doing good work.

The average cost per head rose to Rs. 186-15-9 from Rs. 185-13-11, and with it, the dietary charges, owing to the cost of food grains, while hospital and sanitation charges dropped because of cheaper drugs and the stopping of the boiling of drinking water on the introduction of chlorogen.

Vital statistics are very satisfactory—in fact there has been a continuous and steady improvement since 1912 and the admission to hospital rate per mille, deaths, and death rate per mille were the lowest in the annals of the provincial jail department. The figures for these were 614.9 (823.6 in 1924), 73 (133 in 1924), 11.7 per mille (21.2 per mille in 1924), respectively. Buxar, Bhagalpur, Gaya and Hazaribagh all had high death rates but there were only three above 20 per mille, *i.e.*, Chapra (28), Puri (22), Monghyr (21.9). In Chapra especially admissions were in very bad health; both Puri and Monghyr had much sickness during the year and the latter had 2 deaths from kala-azar.

Cholera was absent; dysentery and malaria decreased; lung tuberculosis remained the same; influenza increased. The dysentery admissions at Bhagalpur central jail since 1923 were 468, 166, and 49, respectively. Malaria was worst at Bhagalpur and Buxar and was treated with febrifuge prophylactically. Influenza was epidemic at Buxar, Bhagalpur and Gaya. Muzaffarpur central lunatic asylum had a daily average of 19.78 lepers under treatment.

11,198 ankylostomiasis examinations were done and 51.68 per cent. showed ova and were treated till free microscopically. To this is ascribed—and probably very correctly—the great drop in dysentery admissions.

189. *United Provinces*.—Accommodation remained satisfactory though the daily average population rose by 1,147. The general health improved and was good; this is ascribed to the excellent feeding and sanitation, and to the enthusiasm and keenness of the Superintendents which the Inspector-General freely acknowledges. The Bareilly juvenile jail received praise from the late Governor of H. M. Borstal Institute, Aylesbury.

The cost per head rose to Rs. 94-1-10 from Rs. 86-3; the dietary charges followed suite due to cost of grain, while hospital and sanitary charges fell mainly because of the reduction in the sick.

The buildings allocation is small and this is commented on by the Inspector-General. It provided for re-roofing, latrines, new quarters, water supply, wells, cook houses, drainage and barracks repairs.

Though daily average population increased by 1,147, admissions to hospital rate (477.1 per mille), daily average sick rate (20.7 per mille), and death rate (10.9 per mille) all fell, the corresponding figures for 1924 being 619.9 per mille, 24.7 per mille, and 11.1 per mille. All central jail death rates were below the provincial death rate (10.9 per mille); of district jails 7 had no deaths, while of those with death rates above 20 per mille Sultanpur, which is the tuberculosis jail, had 120.0, Banda 37.37, Mainpuri 32.5, Budaun 30.6, Muttra 28.0, Bulandshahr 27.2, Ballia 22.9, Etawah 22.4, Muzaffarnagar 21.1.

Sickness was due in order of priority to malaria, abscess, respiratory diseases, pneumonia, dysentery, diarrhoea, lung tuberculosis, anæmia, while mortality figures in order of priority were pneumonia (69), lung tuberculosis (63), dysentery and diarrhoea (23), malaria (15). Pneumonia had 322 admissions (245 in 1924) and the increased population may have had something to do with this. It wants an explanation; tubercle of lungs admissions were 224 (315 in 1924) and 85 went to Sultanpur. Dysentery showed a marked reduction and was absent in 13 jails; malaria also decreased. Leprosy was treated at Rae Bareilly where 47 new admissions and a daily average of 46.63 were treated. There were 3 imported cholera cases at Fyzabad and Bulandshahr.

This report is as usual very full and interesting and the work reflects credit on all concerned.

190. *Punjab*.—The very comprehensive Government resolution which introduces this report deals with the salient points in the working of the jails in a very judicial way and shows a due appreciation of the work done by the department in the face of difficulties.

The striking feature of the position in the Punjab is the overcrowding. The Inspector-General says, "There is no sign of abatement." The four camp jails at Multan, Pindi and Campbellpore still continue, Kasur lock-up was made a subjail, 500 prisoners were transferred to the Borstal Institute and Akali prisoners have now decreased, yet, in spite of this and of the new projects sanctioned or under consideration at Ferozepore, Manawan, Multan and Lahore the position is still serious. It speaks well for the department that under such conditions of overcrowding, discipline and sanitation have apparently not been allowed to suffer and that the health generally has remained satisfactory.

The building grant for original works was Rs. 104,836 (Rs. 115,942 in 1924) and for repairs Rs. 47,148 (Rs. 41,205 in 1924). The net average cost per head dropped to Rs. 110.12 from Rs. 118.7 though dietary and sanitation charges rose, the latter mainly because of the cholera outbreak in Pindi jail.

Daily average sick were 591 (552 in 1924); the total deaths 324 (347 in 1924) and death rate 16.5 per mille (18.34 per mille in 1924). I agree with the Government resolution that these figures and those for diarrhoea and dysentery discount the accusations made against the jail dietary. Amongst central and district jails Multan's mortality was lowest (13.27 per mille and 8.19 per mille, respectively).

The chief cause of sickness was malaria and of deaths was pneumonia and cholera. Malaria and tubercle admissions decreased while dysentery admissions remained stationary. Montgomery suffered worst from malaria.

39 cases of cholera occurred owing to supposed contaminated milk at the Rawalpindi jail hospital. The Superintendent had the advantage of the co-operation of the Director of Public Health of the Punjab in the investigation. The source of infection was not actually determined but it appeared to be one of those explosive type of outbreaks associated with one massive dose of infection acquired from a single polluted source. It was rapidly controlled and the whole jail population inoculated. The outbreak was specially reported on to me by both the Director of Public Health and the jail Superintendent through the Inspector-General of Prisons. As only four cases of cholera have occurred in the Punjab jails during the past ten years this outbreak illustrates the need for the exercise of the utmost care in the details of jail administration.

Lung tuberculosis must claim a final word. I quote the Inspector-General. "The Punjab jails which but a decade ago held the unenviable notoriety of heading the list of all the jails in India for tubercle now show the lowest mortality on this account." In 1917 there were 279 admissions to Shahpur—the tubercle jail—and in 1925 only 95.

This report records much excellent work.

191. *Central Provinces*.—The accommodation decreased by 96 and overcrowding both permanent and temporary existed at Bilaspur and amongst "undertrials" for whom provisional accommodation in empty barracks was arranged. The daily average strength fell by 18. Five prisoners were received from the Andamans (64 in 1924), and 28 men and 3 women volunteered for the Andamans. The Narsinghpur adolescent jail continued to develop the physical side of its inmates by arranging for hockey, drill, etc.

The cost per head per annum fell from Rs. 154-14-3 to Rs. 150-5-2 but dietary and clothing charges rose owing to high prices, while hospital charges diminished owing to fewer sick and sanitation charges remained stationary.

Admissions to hospital fell to 987 (1,373 in 1924); total deaths rose to 46 (45 in 1924) with a rate of 11.02 per mille. Of central jails, Jubbulpore showed a decrease in admissions and deaths and had the healthiest year since 1914, Nagpur had much the same experience, Raipur had an increase of death rate due largely to the bad health of those admitted. Of district jails, Akola, Amraoti and Chhindwara all showed a decrease of admissions.

Amraoti is the leper jail. The suggestion to make it a training centre for medical officers is good. Chhindwara is the tubercle jail begun in 1923 since when tubercle mortality shows signs of dropping.

Cholera and plague were absent though they were prevalent in the civil population. Admissions for dysentery, diarrhoea, malaria, tubercle, influenza all showed a decrease, for pneumonia an increase. Hookworm examinations were continued (*vide* table attached) and suitable treatment given to all found infested.

The usual helminthic tables are attached.

TABLE A.

Hookworm infection in direct admissions and transfers during 1925 in certain jails in Central Provinces.

Jails.	NUMBER OF ADMISSIONS.			NUMBER INFECTED AMONG.			PERCENTAGE OF THOSE INFECTED.		
	Direct.	Transfers.	TOTAL.	Direct.	Transfers.	TOTAL.	Direct.	Transfers.	TOTAL.
Nagpur	158	790	948	Not available.			Not available.		
Jubbulpore	51	123	174	35	80	115	68·63	65·04	66·09
Raipur	Not available.		520	59	27	86	Not available.		16·54
Narsinghpur	15	132	147	4	2	6	26·67	1·51	4·08
Amraoti	967	273	1,240	294	93	387	30·40	34·07	31·21
Akola	38	33	71	21	27	48	55·26	81·82	67·61

TABLE B.

Results of helminth examinations during 1925 in certain jails in Central Provinces.

Jails.	No. of cases examined.	No. infected with helminths.	Ankylostomiasis.	Roundworm.	Whipworm.	Taenia Nana.	Taenia Solium.	Taenia Saginale.	Taenia unspecified.	Threadworm.	Mixed infection.	Percentage of infection with hookworm, 1925.	Percentage of infection with hookworm, 1924.	No. of primary examinations in 1925 and percentage of positive results — hookworm.	No. of re-vaccinations in 1925 and percentage of positive results — hookworm.	Percentage of helminth infection (all kinds).	
																1924.	1925.
Nagpur	948	490	342	117	2	15	..	..	14	..	..	36.08	38.97	530 36.08	2,575	52.60	51.69
Jubbulpore	174	174	115	20	2	8	..	..	35	..	..	66.09	44.93	174 66.09	..	..	..
Raipur	520	86	86	..	..	..	..	..	..	..	..	16.54	25.0	520 16.54	86 12.80	25.45	16.54
Narsinghpur	147	49	6	13	..	..	..	..	..	30	..	4.08	5.48	..	..	25.34	33.33
Amraoti	1,240	625	387	103	25	16	19	1	..	69	..	31.21	28.28	946 34.36	294 21.09	49.47	50.40
Akola	71	71	48	5	1	..	..	..	17	..	..	67.61	63.64	71 67.61	36 2.78	..	..

192. *Assam*.—The daily average population fell by 79 and the available accommodation by 21 owing to dismantling and abandoning of wards at Nowgong and Dibrugarh. A new ward with eight beds for tubercle of lungs was opened at Gauhati.

The admission to hospital ratio and daily average sick ratio though the 3rd lowest since 1916 both rose, the figures being 794·08 and 35·49 per mille (682·97 and 29·48 per mille in 1924); the death rate per mille (29·85) was the 2nd highest since 1916. I agree with Inspector-General that the year was a very unfortunate one; but it is impossible to cope with a heavy admission rate of derelicts, and drug addicts. 30·80 per cent. of admissions had pyorrhoea alveolaris; 35·51 per cent. in the Assam Valley and 6·11 per cent. in the Surma Valley were drug addicts; and the worst jails like Dubri, Dibrugarh, Tezpur and Jorhat had many derelict admissions. All these with Shillong and Gauhati had mortality rates over 25 per mille, *e.g.*, Dubri 63·34, Dibrugarh 45·41, Tezpur 43·93, Jorhat 41·84, Shillong 33·07, Gauhati 31·65. Twelve of the 15 deaths at Tezpur were in very bad health on admission and 44·40 per cent. of admissions had enlarged spleens, malaria being very prevalent here. A similar tale is told of most of the other fatal cases. Gauhati houses the tubercle cases.

Dysentery, tubercle and pneumonia increased, malaria and diarrhoea decreased. No reason is given for the dysentery increase; quinine prophylaxis is cited as of the greatest value in malaria, while the increase of tubercle is viewed with much alarm. It is perhaps too early to be pessimistic especially as cases will now be removed early to Gauhati.

Three cases came from the Andamans one of which died in 24 days after arrival.

General expenditure decreased but the average cost per head rose from Rs. 147-6-7 to Rs. 151-12-1. The dietary charges increased while those for sanitation fell.

193. *North-West Frontier Province*.—Though accommodation increased to 2,770 (*i.e.*, +140) the daily average population was 3,331. There was therefore, as formerly, overcrowding throughout all the year except at Dera Ismail Khan where it lasted for 70 days only. This is a bad state of matters and although the general health remained very satisfactory, the position is one which should not be allowed to remain.

Certain new works were carried out at Peshawar where a new hospital with isolation ward, 2 barracks and a convalescent ward were built, and at Dera Ismail Khan and Kohat where quarters were built.

Average cost per head fell from Rs. 123-4-10 to Rs. 121-12-4. Dietary and hospital charges rose because of the numbers and the cost of grain, and the excess of malaria at Peshawar, while sanitation charges fell.

The daily average sick ratio per mille of average strength was 35, and 43 deaths occurred. Malaria though in excess was mild, especially in Peshawar jail; pneumonia caused 37 admissions and tubercle of lungs 32, of which 12 were transferred to Shahpur.

I have again to repeat that one would welcome more particulars of the disease incidence in the jails of this province.

194. *Burma*.—The daily average population rose by 840 to 17,372. A subjail at Kyaikto was sanctioned and begun.

Daily average sick ratio was 15.14 per mille; that of deaths was 10.30 per mille—the lowest for ten years. Central jails in the order of mortality were as follows: Bassein (12.93), Thayetmyo (12.73), Mandalay (10.36) down to Rangoon (5.94) and Myingyan (5.52); of district jails three had no deaths and the others ranged from Shwebo (3.74) to Mogok (80.46).

Cholera was absent though it was present in the civil population. Two cases of plague occurred at Bassein—a focus—where all prisoners and staff were inoculated. Dysentery decreased while enteric fever, lung tubercle and malaria remained stationary. The decrease in the malaria rate is commented on, *e.g.*, in 1896 the admission rate per mille was 163.50 and in 1925 it was 40.01 per mille.

The enteric fever was largely at Bhamo and Bassein where it was difficult to trace its origin. All Bhamo jail prisoners were inoculated with T. A. B. T. A. B. inoculation was begun in Moulmein in 1922 and this year the jail is for the first time free of enteric for many years. All new admissions are inoculated and all old jail residents are inoculated once a year.

Beri-beri caused 12 admissions, 4 being at Mandalay and 2 at Pagan. The constant incidence in the Pagan jail without any very obvious explanation has been the subject of consideration of the beri-beri enquiry under the Indian Research Fund Association.

4,309 admissions for hookworm (6,810 in 1924) show that the disease is fairly common *ex muris*.

Opium consumption bulks largely in Burma life and it was found that 10.12 per cent. of admissions were addicts. The numbers varied from 56.15 per cent. at Bhamo, 35.33 per cent. at Mogok, 26.14 per cent. at Kyaukpyu, to 25.86 per cent. at Akyab.

General expenditure rose; but dietary, hospital and sanitation charges all fell. A change was made in the diet scales in that 2 oz. rice, and 1 oz. dal or pegya was added, if recommended by a medical officer, for Asiatic prisoners on heavy work or who are losing weight.

Sanitation in all its branches was well looked after and the water projects at Rangoon, Moulmein, Shwebo, Akyab, Bassein are all in the right direction. Sewage and ventilation schemes were considered.

75 trained prisoner microscopists still function. 29,214 vaccinations were done and only 2 cases of small-pox occurred though the disease was epidemic.

The annual report is a long and interesting one.

195. *Andamans*.—Only 97.67 inches of rain fell (96.90 in 1924) as against a quinquennial mean of 115.21 inches.

The total population male and female which was 11,182 in 1921 and 8,538 in 1924, fell to 7,960. There were 340 new arrivals of whom 12 died. The barracks and jails remained as before except that those at Tusoanabad were converted into a hospital. In the three districts the numbers below the capacity of the accommodation available were 2,893. Self-supporters increased and kept good health. They were inspected from time to time in their villages.

Water supply remained the same and diet and vegetable supply were ample, though there was a shortage of fish supply (4,339 lbs. were supplied instead of 9,048 lbs.) to the hospitals.

The general health improved and was good. The daily sick rate and mortality rate of labour convicts fell to 44.60 per mille and 24.66 per mille from 50.62 per mille and 36.58 per mille, respectively, in 1924; those of the self-supporters fell to 14.10 per mille and 14.41 per mille from 19.06 per mille and 23.67 per mille in 1924. There were 167 deaths from disease in the whole settlement = 20.98 per mille of strength.

The accompanying table shows the sick and mortality rates for the different classes of residents.

Sick rates.

	PER MILLE.					
	Admissions.		Daily sick.		Deaths.	
	1924.	1925.	1924.	1925.	1924.	1925.
European Troops . . .	445.31	666.67	27.11	26.27	...	...
Indian „ . . .	421.49	297.52	17.19	14.85	...	...
Police Force . . .	1,278.95	1,011.88	30.37	28.36	7.01	11.88
Labouring convicts . . .	1,186.25	929.84	50.62	44.40	36.90	24.66
Convicts self-supporters . .	412.08	304.52	19.24	14.10	23.43	14.41

The priority order of admissions to hospital (*i.e.*, percentage to total admissions) was as follows: malaria (45.56); dysentery (8.37); injuries (8.37); respiratory diseases (4.71); venereal disease (2.01); ankylostomiasis (1.64); diarrhoea (1.62); pneumonia (1.33); tubercle bacilli (.70).

The priority order of mortality (*i.e.*, percentage of total deaths) was as follows: dysentery (26.45), pneumonia (16.13), lung tubercle (9.03), malaria (8.39), ankylostomiasis (5.16), jaundice (4.52), injuries (1.94), respiratory diseases (1.29).

Malaria is the bug bear and in a conversation I had with the Chief Commissioner last winter he expressed a desire for the visit of an expert malariologist to review the position as described by Christophers pre-war.* Though malaria decreased, it varied much according to locality: quinine prophylaxis from May to September was considered of great value. As new villages are being opened up for settlement, it is essential that they be sited correctly, and that the administration should realise what to avoid. June is still the worst month. Of 2,225 cases 784 were benign tertian, 721 malignant tertian, 29 quartan, and 691 showed no parasite but were clinical cases.

Dysentery and venereal disease seem to be decreasing, tubercle to be stationary, scurvy to be practically non-existent and influenza negligible; hookworm has increased and all arrivals are examined for it, the Mapillas being heavily infected. A travelling dispensary will visit villages and examine for it and an extra sub-assistant surgeon has been asked for. It is hoped this can be arranged.

* This has been arranged in 1926.

Dysentery showed about 33 per cent. amoebic and the rest bacillary. It presents a choleraic type which relapses easily and may be fly borne. An anti-fly campaign was started. Treatment was tried with all the usual remedies.

Four mental cases were admitted and one remained at end of the year; 5 lepers were admitted and 3 remained at end of the year; 3 having been transferred and 1 discharged.

The report which is, as usual, a very interesting one also covers the health of the free population.

196. *Coorg*.—My acknowledgments are due for the report on Coorg which is again very informative.

(conclusions.

197. In previous reports I have had occasion to remark on the general excellence of the preventive work throughout the jails of India. This is an aspect of jail administration which requires constant reiteration as I doubt very much if the public realises its value or excellence. Though the population at risk is under strict discipline it is nevertheless a mixed sample, at times physically very poor and even diseased, and is often situated within endemic or epidemic areas. It is therefore no small achievement that our jail superintendents in India during 1925 were able, if we except the localised milk borne outbreak of cholera at Rawalpindi, practically to exclude serious epidemic outbreaks and this, I am glad to see, is fully recognised by the different Inspectors-General.

As I have previously pointed out, the present jail superintendent requires to play many rôles, both technical and non-technical, in the execution of his multifarious duties. That a trained, disciplined and educated mind is brought to bear on these different duties is to my thinking one of the reasons why our jails are managed at a cost, so far as supervision is concerned, in no way commensurate with the value of the work done.

The fact that building programmes are held up for want of money, that overcrowding exists and persists, and that popular criticism in regard to standard diets is often highly unreasonable and wrong does not detract from the value of the work referred to but rather accentuates it.

It is again a pleasing feature in connection with two of these reports* to read the appreciative Government resolutions which accompany them and which, while facing facts, are still able to apportion a measure of praise to those who are doing a work which is often delicate as well as difficult.

* Punjab and Madras.

SECTION VIII.

Summary.

198. (a) India's birth rate for 1925 was nearly twice that of England and Wales; her death rate was twice that of England and Wales and nearly three times that of New Zealand; her infantile mortality rate was nearly $2\frac{1}{2}$ times that of England and Wales and nearly $4\frac{1}{2}$ times that of New Zealand.

(b) The information furnished for the great group of infectious diseases of world import, *i.e.*, plague, cholera, small-pox, yellow fever, typhus, malaria and dysentery shows that, if we except typhus and yellow fever, India is one of the world reservoirs of infection for the others, and the main reservoir of infection for plague and cholera.

199. The significance of these facts must be obvious to all who think. Briefly their implication is that India's house, from the public health point of view, is sadly out of order, and that this disorder requires to be attended to. In previous reports efforts have been made to bring home to the Indian public what the state of India's public health was, and to indicate some of the methods by which it could be ameliorated. Till recently this seemed a matter which concerned India alone and it was largely in this spirit that this question was regarded in India. With the reawakening of interest in all social problems and the increased international activity regarding public health and the prevention of disease which occurred after the Great War, it was evident that much in the realm of national disease which formerly passed unnoticed must now come into the lime light and be subjected to international scrutiny. It was not enough for India to say that she was concerned with 300 millions of her own subjects and had no time to worry over the activities of other nations. She must be prepared to recognise that, in virtue of her important commercial position, she is an international offender—and a dangerous one as well—and in this spirit, to set about tackling the problem which confronts her by employing an organisation capable of utilising for such purposes the most recent discoveries of research in regard to these diseases and disease problems which are peculiarly her own.

It is not difficult to understand how a policy of international indifference may easily lead to international misconceptions; and there is little doubt that such was rapidly taking place in Europe in regard to one of our diseases—cholera—, had not a wise policy of international publicity been inaugurated which ensured accurate up-to-date information regarding our activities being made available for such International Committees as were immediately concerned with this problem. The value of this publicity has been borne out by the fact that, at the moment, international eyes are directed earnestly to our workers and the work they are now doing towards the solution of some of the most pressing of these problems.

200. It is almost a platitude to state that much of the economic loss and human suffering going on in India to-day is avoidable. Experience, not only throughout the British Empire but also in other countries, has demonstrated this, and only a few examples need be adduced. The control of malaria and yellow fever rendered the con-

struction of the Panama Canal possible. The campaign so assiduously waged against ignorance of malaria in the Malay States during the last 25 years by Sir Malcolm Watson has now borne fruit, and his general recommendations are accepted principles in plantation management throughout the Straits and Federated Malay States. A reference to his book* for the detailed figures for 1911 and 1923 of a rubber estate which I had the pleasure of visiting with him will prove this as the contrast between the economic, medical and sanitary conditions at the beginning and end of the twelve year period cannot fail to carry conviction.

Queensland tells a similar story in regard to large annual savings after anti-mosquito reduction work; Java has found it a paying proposition to banish cholera largely by inoculation and to control plague by seriously tackling the housing question; wide campaigns against ankylostomiasis, largely engineered by the International Health Board of New York, have had a striking economic effect; the provision of abundant and pure water has made the control of cholera, dysentery and enteric, even in the tropics, a comparatively simple matter.

Within 50 years the record of the British Empire appears to be wonderful. New Zealand has the lowest infantile mortality in the world; Australia probably has one of the best quarantine services. Federated Malay States and Straits Settlements have developed a strong malaria policy in regard to which Sir Ronald Ross said a few months ago; "No city in the Empire has progressed so far in the matter of malaria control as Singapore." Canada has followed the United States model and is forging ahead; Hong Kong has become a comparatively healthy sea-port; Colombo is a modern city with up-to-date sewage and waterworks; Palestine since the war has been hygienically revolutionised. West Africa, East Africa, Uganda, Kenya, Tanganyika, and the Soudan have presented opportunities for the control of yellow fever, malaria, syphilis and tse-tse fly disease. Nor are other countries behind them; the French, the Dutch, the Germans, the Japanese, and the Americans are everywhere engaged in bringing the application of scientific discoveries to bear in a practical manner on the prevention of disease.

With such an array of examples it is not for India to say that, so far as she is concerned, prevention is impossible. If we think of the effect of sunlight on tubercle ridden children; of the effect of feeding on rickets, scurvy and beri-beri; of the way in which malaria, cholera, yellow fever, dengue, ankylostomiasis, and filariasis can be and have been overcome we need have no fear in regard to India provided the necessary measures are put into operation.

201. This leads to a consideration of the forces which are now at work in endeavouring to put India's house in order from a public health and preventive point of view. Present effort may be regarded as being both a State and a voluntary one. This is as it should be; but, since the introduction of the Reforms scheme with its large measure of public health devolution, the political element has entered in a way previously unknown, more especially in connection with the financial aspect of these problems.

* Prevention of Malaria in the Federated Malay States.

Under pre-reform organisation provinces found themselves in possession of a basic public health organisation, which, by slow evolution, had reached a stage when great improvements, both in regard to the number and quality of the trained public health personnel, were within sight. A perusal of the Resolution of the Government of India, Department of Education and Health, No. 888-908, dated 23rd May 1914, can leave no doubt on this point.

In some provinces these improvements, though they have developed slowly, are now in a fair way to maturing; but others, with less appreciation of the actual needs, so far from adding to the organisation as they found it, have shown a desire to scrap even some of what they originally possessed. This is hardly encouraging, nor is it sound; and it should be resisted wherever it is met. The well established principle should be recognised everywhere that an expert public health and preventive head is an essential in every province, as it is mainly thus that efficient direction of the organisation can be ensured and that the case for adequate financial support can be properly represented to the members of the Legislative Councils. General experience in regard to what is happening at the moment throughout India would appear to me to indicate that public health measures suffer financially, not so much because of unwillingness on the part of members of Legislative Councils to consider them sympathetically, as because of an inadequate presentation of the case for their adoption.

(b) It is a pleasure to turn to the consideration of the effect of voluntary effort in this connection and to realise that in certain provinces much work is now being attempted which would probably have been considered impossible a few years ago. It may be well to glance rapidly at voluntary effort in other countries with a view to appreciating its scope and possibilities in India, where State organisation in modern preventive and medical policy is so prominently in evidence, and almost too much is expected from the State. Let us examine the rôle which voluntary societies can and do play in this matter; and also the place of the volunteer in health work. If we look at the record of voluntary work in Great Britain we see that the whole history of public health is full of instances showing the essential part played by such effort. Public care of the sick started with the privately-owned hospitals and monasteries. The great reforms such as the reform of the Poor Law, the passing of the Burial Act, the earlier Housing Acts were all the results of voluntary effort very often engineered entirely by laymen, as, for instance, the work done by Chadwick. The Midwives' Act of 1902 was largely the result of private effort through the "Association for Promoting the Training and Supply of Midwives," while the National League for Physical Education and Improvement was largely instrumental in creating the legislation for medical inspection of school children. Such measures as the control of tuberculosis, venereal disease, and infantile mortality owe much to voluntary bodies.

Sir George Newman in a recent essay pointed out three reasons why the State organisation of public health needs supplementing by other methods:

- (a) no act of legislation or official regulation can exercise direct or continuous control of the personal health and habit of the normal individual,

- (b) the State system of sanitation and public health requires impulse from the people as a whole to make it effective,
- (c) the people require instruction in understanding, using and putting into operation the public provision made on their behalf.

The results of the recognition of these principles are everywhere apparent in the history of the evolution of public health in Great Britain to-day. In the aforesaid essay he mentions some 24 voluntary societies all of which have been doing work on special lines in Great Britain since they were founded; and he stresses the fact that central and local authorities cannot as a rule launch new schemes or extend the existing ones unless there has been considerable preparation in the mind of the people or, in other words, enlightened public opinion. Generally speaking, therefore, the official action is confined to promoting the discovery of new truth, to framing new laws and regulations, to instituting enquiries and to presenting up-to-date knowledge in an intelligent manner. In this way voluntary bodies are able to lead public opinion in support of Government and the best line of progress. Public health is peculiarly suited to voluntary initiative as private enterprise can easily arrange for experiments which, if successful, can be followed up by the State. These bodies may be of all kinds, from the Red Cross and St. John Association to Religious and Charity Organisations; and, even though there may be overlapping, this does not necessarily detract from their value. Co-ordination is no doubt advisable, provided it implies neither uniformity nor loss of initiative and independence. Some of our leading hygienists have advocated that every one in his spare time should become a member and a subscriber, if possible a worker or an officer, of some agency working for the public health.

It would be wrong to say that personal service is not attempted by various societies of recent formation in India. The Seva Samiti and many other kindred societies do work which is much appreciated on various public occasions. These, however, want greater backing, both financial and personal. The work they do at once advances the claims of the individual in civil health matters to the platform of those of the community, and this is a big step forward in India at present. In such an epidemic ridden country the field for social service is large, and example is always contagious. Any desire for such service cannot be regulated or promoted advantageously by the State; it is a matter essentially for the different communities and the individuals in each. Money is required for organisation. It is useless for Zamindars with large property to preach the gospel of village improvement if they themselves are content to have a congeries of insanitary hovels round their own residences. It is only by raising the standard of education in matters hygienic that we can contemplate any progress being made in social service. Education is the surest foundation, more especially the education of the young. The work suggested for the Junior Red Cross Society is to my mind likely to bear fruit in the future if it is developed on sound lines. The new generation requires to have these principles instilled into it at an early age. It is not enough for the individual to say that this is the business of the State; moreover the worker must be prepared to show a spirit devoid of self-interest and

to demonstrate by his actions that he practices what he preaches. The finest object lesson that any Indian can have in regard to hygienic progress resulting from an enlightened public opinion is to be seen in the progress that has been made in Great Britain during the past 50 years. Newman points out, how, within that period, gross and widespread drunkenness as an every day fault has almost disappeared, profound changes in the dietary, diminution of spitting, a rise in the standard of personal and domestic cleanliness, and abolition of the degrading conditions and misery of the toil of little children in factories, mills and mines have taken place. These all help to show the irresistible and invincible effect of a compulsory system of elementary education.

The early story of hygienic improvement in Great Britain centred round the environment of the individual; but, as progress was made, the wider and bigger issues were grappled with, so that the community began to receive much of the attention previously bestowed on the individual, thus putting public health on a higher plane. Unfortunately, Indian public opinion is not yet educated sufficiently to permit of the same result. In this respect I consider that India is not any further advanced than was Great Britain 50 or 60 years ago.

Despite my having adduced Great Britain as an instance of hygienic development the march of this education has been slow enough even there. In a recent address at the Royal Society of Arts, Newman pointed out many of the unhygienic blots which still remain in Great Britain—such blots as non-compulsory vaccination, milk-borne typhoid, slowness in utilising the latest advances in connection with diphtheria, tuberculosis and ante-natal care. In a recent report by Sir Ronald Ross on his Eastern tour he says of Calcutta:—

“Why Indians are allowed to live in some areas like Andamanese savages passes my comprehension. The bazars are still dreadful and I could see little improvement since my experiences thirty years ago.”

It is a relief to turn from this side of the picture and to view signs of progress in different areas throughout India. First and foremost we have the work of our Red Cross Society, of the St. John Association and of the British Empire Leprosy Relief Association. We have schemes for the development of medical aid for women. We have in Bengal a programme developing the work in villages; in the Punjab we have a programme to add 375 new dispensaries to the 666 hospitals now existing in the province thus ensuring medical relief in each ten square mile area; in Bombay we have a scheme for training teachers in medical relief in villages. Even a trenchant critic like Sir Ronald Ross during his visit to India in the winter of 1926-27 was able to write as follows:—

“Nothing gave me greater pleasure during my tour than to hear of the formation and the work of the Co-operative Anti-Malaria and Public Health Societies of Bengal, managed by the people themselves, with many branches in remote villages and rural areas. This is the way towards effective control of those terrible pests which destroy so many of the dumb millions who live (and die) in those wide tracts. Nothing of the kind would even have been dreamed of in India thirty years ago, when medical men were generally met with opposition if not with hostility by the very people whom they were attempting to save. I was glad to hear that Lord Lytton had approved and assisted the scheme, and I should like to see it extended as much as possible throughout India. Rai Bahadur Dr. G. C. Chatterjee is to be warmly congratulated for his idea and for the work which he is doing in connection with it, and I can only regret that my time did not allow me to inspect some of his results. The late lamented Dr. Sir Kailas Chandra Bose, C.I.E., C.B.E., was head of the movement, but died while I was in the Duars.”

What we want to see is more effort in such directions as those indicated. No one should want the facts to be concealed, as, before problems can be tackled, the facts must be stated and faced. There is no doubt that much requires to be done in India.

202. Certain conclusions have been forced upon me after careful study of the position over the last few years. Though the picture is neither bright nor the future rosy it is becoming increasingly evident that a considerable section of the Indian community is thinking seriously on these public health problems. Amidst much futile and destructive criticism of State and municipal effort, here and there valuable and suggestive constructive criticism can be met with, which goes to prove my contention.

Last year at the Royal Sanitary Institute I had the opportunity of hearing Lord Riddell on the subject of the press in regard to public health. He was out for the closest co-operation and in this I agree. America has led the way in such matters, more especially in regard to regular publications, special articles, exhibitions, cinemas and broadcasting.

A well informed press, both European and vernacular, but especially the latter will be one of our most powerful allies in this great fight; for fight it must be, even to waging war and carrying it right into the enemy's camp. This is a work which has to be done for the benefit of Indians. To be effective it must carry conviction and establish its position against immemorial conservatism and tradition; it must therefore be done by Indians. It presents a grand and unlimited field for Indian public health workers, be they medical or lay, male or female; but it is well to recognise that the improvements cannot be achieved when the expert labourers are too few in number, that these cannot be increased to the requisite number without a careful system of specialised training in institutes or schools devoted to public health teaching and research, and that this cannot be done without adequate financial support. The need for such training of Indian personnel has been advocated for the last two decades by our expert hygienists and research workers in India, as it has often been represented, and not without justice, that scientific knowledge in regard to prevention of certain communicable diseases has far out-stripped its application in the field; it is with such personnel that the practical application must finally rest.

We can now see how voluntary organisations should co-operate with official agencies, how health authorities should co-operate with the lay press, how insurance companies should try to co-operate with their policy holders, how the private doctor should co-operate with his patients, and, last but not least, how nation should co-operate with nation. The development in the last phase has, since the Great War terminated, been phenomenal. The work done by the two great international agencies—the Health Section of the League of Nations and the International Health Board of New York—requires no amplification from me. I look at the entry of the League into public health matters of nationals as an innovation which must bear fruit and do good. It will help to break down more rapidly many barriers which have little to recommend them, and, whilst bringing home to India what other countries are doing and have done, it will incidentally enable Indians to realise the leeway which has to be made up. They will realise how European

death rates have come tumbling down, and how general morbidity rates have fallen; they will ponder over the fact that, in 1885, the expectancy of life in the United States of America was 40 years whilst now it is 58; they may be tempted to probe further into the reasons for this and into the story of the work of voluntary organisations. In this way it is hoped that many Indians may rise who will help to form and lead public opinion in these matters.

I have the honour to be,

SIR,

Your Obedient Servant,

J. D. GRAHAM, Colonel, I.M.S.,

*Public Health Commissioner
with the Government of India.*

SIMLA,

September 1927.

APPENDIX TO SECTION I.

GENERAL POPULATION.

APPENDIX TO SECTION I.—GENERAL POPULATION.

A.—Maximum, minimum and mean temperature in shade and the departure from the average of the mean temperature for each month at 31 stations in India during 1925.

Station.	JANUARY.				FEBRUARY.				MARCH.			
	Max.	Min.	Mean temp.	Dep.	Max.	Min.	Mean temp.	Dep.	Max.	Min.	Mean temp.	Dep.
Calcutta	75.5	56.0	65.7	-0.8	82.2	59.3	70.7	-0.5	93.3	69.4	81.3	+1.1
Narayanganj.	75.0	56.2	65.6	-0.9	79.0	59.4	69.2	-1.0	89.2	67.7	78.5	-0.3
Ohittagong	74.8	54.9	64.9	-1.9	79.4	56.4	67.9	-2.5	87.8	65.2	76.5	-0.5
Sibsagar	69.2	50.1	59.7	-0.2	73.5	55.0	64.3	+1.3	80.6	59.5	70.1	+0.9
Silchar	74.1	53.6	63.9	-1.3	77.3	54.8	66.1	-2.1	87.1	62.4	74.7	+0.3
Cuttack	79.1	59.6	69.3	-2.3	87.3	62.4	74.9	-2.1	97.2	70.4	83.8	-0.7
Patna	70.2	50.2	60.2	-1.6	76.4	52.8	64.6	-1.3	90.5	65.1	77.8	+1.1
Darjeeling	44.5	32.9	38.7	-2.5	47.7	35.3	41.5	-1.0	58.8	43.8	51.3	+1.9
Allahabad	73.5	45.1	59.3	-1.9	79.9	48.1	64.0	-1.7	93.6	59.7	76.7	-0.1
Lucknow	71.1	45.6	58.3	-2.0	78.5	48.9	63.7	-1.0	93.0	61.6	77.3	+1.9
Delhi	65.5	46.5	56.0	-2.9	70.5	49.7	60.1	-3.1	87.1	62.0	74.5	+0.7
Agra	70.2	40.0	55.1	-3.9	75.8	42.6	59.2	-3.5	90.7	54.7	72.5	-0.3
Jhansi	74.0	43.8	58.9	-4.6	79.6	48.3	63.9	-4.0	93.7	62.0	77.9	-1.1
Ajmer	68.8	41.5	55.1	-4.5	73.7	44.6	59.1	-4.4	90.4	59.9	75.1	+0.9
Sangor	74.3	48.9	61.6	-3.1	80.6	53.9	67.3	-0.7	92.2	66.1	79.1	+1.3
Jubbulpore	75.7	44.7	60.2	-2.9	82.0	47.0	64.5	-2.5	93.7	58.2	75.9	-0.2
Multan	67.2	43.9	55.1	-1.9	71.3	43.3	57.3	-3.7	90.5	61.5	76.0	+4.1
Lahore	64.0	39.5	51.7	-3.3	69.1	41.7	55.4	-3.1	86.4	55.8	71.1	+2.1
Peshawar	60.3	36.4	48.3	-2.9	63.8	38.6	51.2	-3.1	82.4	53.0	67.7	+4.5
Chakrata	48.2	32.7	39.7	-2.7	53.0	36.0	44.5	+0.7	62.5	44.8	53.7	+1.8
Indore	76.7	45.2	60.9	-3.9	83.5	48.5	66.0	-1.7	94.5	60.1	77.3	+0.9
Deesa	79.7	44.2	61.9	-5.5	84.5	46.2	65.3	-5.0	100.0	59.6	79.8	+0.3
Karachi	73.7	54.9	64.3	-2.8	75.2	57.1	66.1	-3.2	82.7	68.7	75.7	+1.0
Bombay	81.1	65.2	73.1	-2.3	81.1	65.5	73.3	-2.5	89.1	74.4	81.7	+2.3
Belgaum	84.6	55.6	70.1	-0.5	89.6	58.6	74.2	+0.2	93.9	64.8	79.3	+0.7
Nagpur	82.6	52.3	67.5	-2.1	89.5	56.2	72.9	-1.2	98.1	65.7	81.9	-0.4
Bellary	89.6	60.9	75.3	+0.3	94.9	65.0	79.9	-0.1	99.5	72.0	85.7	-0.5
Bangalore	85.1	58.1	71.6	+2.5	88.4	59.5	73.9	-0.7	91.7	65.3	78.5	+0.5
Madras	84.1	66.0	75.1	-1.1	87.4	66.4	76.9	-0.9	88.3	71.9	80.1	-0.9
Rangoon	89.0	64.8	76.9	+0.1	91.8	65.9	78.9	-0.5	96.4	70.9	83.7	+0.1
Akyab	77.5	58.5	68.0	-2.1	82.7	59.3	71.0	-1.7	89.5	67.1	78.3	-0.2

(b) Mean of 30 days.

(c) Mean of 17 days.

(e) Mean of 27 days.

NOTE.—First column gives the mean of daily maximum temperatures and the second the mean of the previous two columns, while the fourth gives the departures from normal of values in the third

from the average of the mean temperature for each month at 31 stations in 1925.

APRIL.				MAY.				JUNE.			
Max.	Min.	Mean temp.	Dep.	Max.	Min.	Mean temp.	Dep.	Max.	Min.	Mean temp.	Dep.
94.4	76.3	85.3	-0.3	95.3	78.8	87.1	+0.9	92.2	79.2	85.7	+0.7
91.6	74.3	82.9	-0.1	90.2	76.2	83.2	-0.3	90.1	78.8	84.5	+0.9
89.6	73.3	81.5	+0.7	89.9	76.7	83.3	+1.2	88.0	77.4	82.7	+0.9
82.0	67.4	74.7	+1.1	81.4	70.3	75.9	-2.6	90.7	77.0	83.9	+1.5
87.8	69.8	78.8	+0.5	86.1	71.6	78.9	-1.8	90.6	76.7	83.7	+0.9
98.3	76.3	88.3	-1.2	102.0	80.5	91.3	+0.7	95.6	79.5	87.5	+0.1
94.9	73.9	84.4	-1.7	98.8	78.7	88.7	+0.1	96.4	80.2	88.3	+0.5
61.8	49.9	55.9	+0.4	65.0	53.2	59.1	+0.7	66.9	57.1	62.0	+0.7
102.6	73.8	88.2	+0.8	108.7	79.4	91.5	-1.5	101.1	81.4	91.3	-1.1
102.3	73.8	88.1	+1.9	103.5	80.2	92.9	+1.6	98.5	79.5	89.0	-2.5
100.2	75.8	88.0	+2.7	102.7	81.9	92.3	+0.2	95.4	79.8	87.6	-5.9
104.4	70.8	87.6	+2.9	105.1	77.5	91.3	-0.9	95.7	79.1	87.4	-7.1
105.8	75.6	90.7	+1.1	105.8	80.6	93.2	-2.7	96.1	78.3	87.2	-7.0
101.0	73.5	87.1	+2.4	100.8	78.1	89.5	-2.3	94.1	78.4	86.3	-4.9
101.8	76.2	89.0	+2.3	100.4	76.7	88.5	-3.3	93.9	74.7	84.3	-3.9
104.2	71.4	87.8	+2.3	102.6	77.2	89.9	-2.0	94.3	76.4	85.3	-3.0
104.6	74.1	89.3	+6.4	105.0	80.2	92.6	+0.1	107.9	85.4	96.7	+0.1
101.0	69.7	85.3	+5.2	102.8	75.5	89.1	-0.1	100.4	80.3	90.3	-3.5
94.6	64.6	79.6	+6.9	98.1	69.8	83.9	-0.3	104.7	78.4	91.5	-0.4
71.3	55.2	63.3	+3.1	74.7	58.2	66.5	+1.1	70.9	58.5	64.7	-2.3
103.7	72.4	88.1	+3.2	100.7	75.5	88.1	-1.4	91.4	74.1	82.7	-2.7
107.6	70.6	89.1	+1.7	106.9	77.7	92.3	+0.1	98.0	78.5	88.3	-3.1
88.2	76.4	82.3	+3.0	89.0	79.9	84.5	+0.7	92.1	82.6	87.3	+0.7
91.1	79.7	85.4	+2.3	92.0	81.8	86.9	+1.1	86.8	78.5	82.7	-1.3
96.6	68.3	82.5	+0.9	89.4	69.3	79.3	-1.3	81.1	67.9	74.5	-0.3
108.1	77.7	92.9	+2.7	105.2	80.6	92.9	-2.3	95.5	77.5	86.5	-2.5
103.9	77.8	90.9	+0.5	99.3	76.2	87.7	-2.2	95.6	75.4	85.5	+0.1
95.3	70.4	82.9	+1.4	87.5	68.3	77.9	-2.5	86.0	67.1	76.5	+0.7
33.3	77.6	85.5	+0.1	97.0	79.7	88.3	-1.5	99.4	81.2	90.3	+0.3
91.8	75.5	83.7	-3.4	91.6	76.4	84.0	-0.5	86.5	77.1	81.8	+0.4
90.9	71.8	82.9	-0.5	87.5	77.1	82.3	-1.8	84.6	77.0	80.8	-0.9

(d) Mean of 23 days.

of daily minimum temperatures; the third column is the mean between maximum and minimum of column.

APPENDIX TO SECTION I.—

GENERAL POPULATION—contd.

A.—Maximum, minimum and mean temperature in shade and the departure during

from the average of the mean temperature for each month at 31 stations in India 1925.

Station.	JULY.				AUGUST.				SEPTEMBER.				OCTOBER.				NOVEMBER.				DECEMBER.			
	Max.	Min.	Mean temp.	Dep.	Max.	Min.	Mean temp.	Dep.	Max.	Min.	Mean temp.	Dep.	Max.	Min.	Mean temp.	Dep.	Max.	Min.	Mean temp.	Dep.	Max.	Min.	Mean temp.	Dep.
Calcutta	87.7	78.8	83.3	-0.4	89.9	80.0	84.9	+1.8	89.3	79.1	84.2	+1.1	87.1	74.4	80.7	-0.2	82.6	65.5	74.1	+0.6	76.9	57.0	66.9	+0.5
Narayanganj	86.7	78.4	82.5	-1.0	88.5	79.4	83.9	+0.7	88.9	78.6	83.7	+0.2	86.3	74.1	80.2	-1.4	83.0	65.4	74.2	-0.6	78.9	56.7	67.8	+0.3
Chittagong	86.0	76.2	81.1	-0.1	88.3	77.4	82.9	+1.7	87.8	76.5	82.1	+0.5	86.3	72.3	79.3	-0.7	82.9	63.5	73.2	-1.2	78.3	56.7	67.5	-0.3
Sibsagar	89.9	77.4	83.7	+0.2	89.0	78.1	83.5	+0.5	86.5	74.7	80.6	-1.3	84.9	69.0	76.9	-0.4	80.3	58.9	69.6	+0.9	74.1	46.5	60.3	-0.7
Silchar	90.5	76.9	83.7	+0.1	89.4	77.2	83.3	+0.1	89.0	75.8	82.4	-0.6	86.8	70.6	78.7	-1.7	84.3	62.4	73.3	-0.9	80.2	50.9	65.5	-1.6
Cuttack	85.9	77.3	81.6	-2.7	89.2	78.4	83.8	0	89.7	77.7	83.7	-0.4	87.2	74.4	80.8	-1.5	83.2	67.8	75.5	-0.1	77.0	57.9	67.5	-2.4
Patna	89.6	79.7	84.7	-0.5	88.6	79.9	84.3	0	89.6	78.8	84.2	+0.1	88.3	73.6	80.9	+0.3	81.2	61.3	71.3	-0.1	74.5	53.0	63.7	+0.8
Darjeeling	67.6	58.7	63.1	+0.7	67.1	58.7	62.9	+0.9	65.6	56.0	60.8	+0.1	61.6	49.0	55.3	-0.6	55.2	42.5	48.9	-0.3	53.3	38.9	46.1	+3.1
Allahabad	88.4	78.2	83.3	-3.0	91.4	79.7	85.5	+1.3	90.7	76.2	83.5	-0.7	93.0	68.2	80.6	+1.3	82.3	54.8	68.5	-0.8	75.9	45.2	60.5	-1.1
Lucknow	89.5	78.1	83.8	-2.1	92.0	79.2	85.6	+1.1	91.8	75.6	83.7	-0.4	93.2	67.9	80.5	+1.8	82.7	54.3	68.5	-0.1	76.5	46.1	61.3	+0.3
Delhi	89.3	79.2	84.3	-3.7	93.4	80.1	86.7	+0.7	97.1	79.4	88.3	+3.2	91.3	70.3	80.8	+0.8	77.3	57.5	67.4	-2.1	71.6	49.6	60.6	-0.8
Agra	88.6	77.7	83.4	-4.5	94.3	78.1	86.2	+0.9	97.5	73.5	85.5	+1.1	95.6	63.7	79.7	+1.9	80.3	52.1	66.2	-1.3	75.3	42.7	59.0	-1.7
Jhansi	87.3	75.9	81.6	-4.3	92.4	77.8	85.1	+1.7	94.7	75.0	84.9	+0.9	95.3	67.6	81.5	+0.1	82.1	56.2	69.1	-2.9	77.0	46.8	61.9	-2.8
Ajmer	87.0	76.1	81.5	-3.5	89.1	77.2	83.1	+1.1	94.5	76.7	85.6	+3.2	95.8	67.6	81.7	+3.5	81.1	55.9	68.5	+0.3	75.6	46.5	61.1	0
Saugor	80.8	71.9	76.3	-3.7	85.3	72.5	78.9	+0.7	88.1	70.1	79.1	+0.1	90.4	67.0	78.7	+1.3	80.0	58.4	69.2	-1.0	75.6	51.7	63.7	-1.1
Jubbulpore	81.5	73.3	77.4	-3.5	86.1	74.9	80.5	+1.2	88.6	72.3	80.5	+0.5	90.8	65.5	78.1	+2.2	80.4	57.9	69.1	+1.5	76.5	47.0	61.7	-0.1
Multan	104.0	83.9	93.9	-0.5	100.1	81.0	90.5	-1.1	101.1	76.9	89.0	-0.1	96.6	68.7	82.7	+1.9	82.5	51.5	67.0	-2.1	76.3	42.9	59.6	+0.4
Lahore	95.3	80.3	87.8	-2.9	95.6	79.0	87.3	-1.2	99.3	74.1	86.7	+0.9	92.2	64.2	78.2	+0.5	77.1	48.8	62.9	-2.9	72.1	39.0	55.5	-1.1
Peshawar	100.1	80.6	90.3	-1.3	98.3	76.6	87.5	-1.3	95.8	71.0	83.4	+0.1	85.8	61.3	73.6	+0.3	71.8	45.2	58.5	-2.9	66.6	35.5	51.1	-1.7
Ohkhrata	68.6	61.0	64.8	-0.3	68.6	60.4	64.5	+0.3	69.7	56.7	63.2	+0.1	65.9	50.6	58.3	-0.7	57.9	42.0	49.9	-2.3	55.9	40.9	48.4	+1.1
Indore	83.7	72.3	78.0	-1.1	84.5	71.9	78.2	+1.2	89.6	69.5	79.3	+1.5	95.0	65.6	80.3	+4.1	84.3	60.3	72.3	+2.9	80.0	51.1	65.5	+0.7
Deesa	89.2	76.4	82.5	-2.8	93.2	76.2	84.7	+2.1	99.1	72.4	85.7	+2.0	104.2	67.9	86.1	+3.9	93.7	58.8	76.3	+1.1	87.9	52.1	70.0	+0.9
Karachi	87.9	80.9	84.4	-0.3	86.8	79.2	83.0	+1.2	85.1	76.3	80.7	-0.4	88.0	74.4	81.2	+0.7	85.0	67.0	76.0	+0.3	80.3	59.1	69.7	+1.0
Bombay	85.8	78.6	82.2	+0.9	85.4	78.1	81.7	+0.9	86.8	77.5	82.1	+1.2	91.7	79.6	85.7	+3.3	90.5	77.1	83.8	+3.2	87.2	72.8	80.0	+2.7
Belgaum	75.6	67.6	71.6	-0.1	77.3	67.1	72.2	+0.9	81.1	65.8	73.5	+1.1	84.6	65.7	75.1	+0.9	84.6	63.5	74.1	+2.1	80.0	59.0	69.5	-0.6
Nagpur	84.3	74.6	79.5	-2.3	86.7	75.0	80.9	+0.1	90.4	74.4	82.4	+0.9	91.8	69.3	80.5	+1.1	84.3	63.6	73.9	+1.1	78.7	55.0	66.9	-1.1
Bellary	91.7	75.0	83.3	+0.3	91.0	74.2	82.6	+0.3	93.1	73.2	83.1	+1.3	88.3	71.2	80.3	-1.1	85.0	66.8	75.9	-0.9	80.2	63.7	71.9	-1.9
Bangalore	82.7	65.7	74.2	+0.1	82.0	66.3	74.1	+0.3	85.1	66.2	75.7	+1.7	83.4	64.7	74.1	+0.4	81.3	62.3	71.8	+0.8	78.7	60.9	69.8	+1.1
Madras	96.3	79.2	87.7	+0.3	93.7	77.1	85.4	-0.5	94.2	77.9	86.1	+0.9	88.5	74.9	81.7	-0.6	83.9	72.8	78.3	-0.5	81.0	70.6	75.8	-0.9
Rangoon	84.4	74.6	79.5	-1.1	84.6	75.8	80.2	-0.2	87.1	76.5	81.8	+0.9	88.5	75.7	82.1	+0.4	91.6	74.1	82.9	+2.7	88.2	65.4	76.8	-0.5
Akyab	82.9	75.7	79.3	-1.5	84.6	77.2	80.9	+0.1	84.9	76.6	80.7	-1.1	87.4	75.2	81.3	-0.5	86.2	69.1	77.7	-0.1	81.6	60.5	71.1	-0.9

(c) Mean of 29 days.

(e) Mean of 27 days.

(o) Mean of 17 days.

(r) Mean of 14 days.

APPENDIX TO SECTION I.—GENERAL POPULATION—contd.

B.—Monthly and annual rainfall and its departures from the average at 33 stations in India during 1925.

Station.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		ANNUAL.	
	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.	Rain.	Dep.
Calcutta	0.73	+0.39	0.23	-0.87	0.47	-0.97	3.35	+1.46	4.68	-1.07	7.54	-4.36	17.76	+5.25	8.02	-4.67	7.42	-2.45	8.73	+4.54	0.31	-0.35	0	-0.20	59.24	-3.30
Narayanganj	0.34	+0.04	1.48	+0.08	1.92	-0.77	5.35	-0.13	12.15	+2.74	8.36	-4.59	10.84	-2.14	7.08	-5.66	5.32	-4.31	5.55	+0.48	0.10	-0.88	0	-0.19	58.49	-15.33
Chittagong	1.40	+1.12		-1.03	0.01	-2.55	7.49	+2.02	9.93	+0.41	22.33	+1.54	40.68	+18.28	19.08	-0.22	19.60	+7.67	10.27	+3.39	3.82	+1.95	0.02	-0.68	134.63	+31.90
Sibsagar	2.21	+0.92	0.77	-1.24	5.68	+0.90	10.14	+0.03	20.48	+8.59	9.71	-4.50	19.63	+2.62	12.41	-3.86	14.73	+3.03	8.52	+3.42	0.23	-0.87	0.12	-0.40	104.63	+8.64
Silchar	1.48	+0.67	1.38	-0.74	3.19	-4.72	13.30	-1.03	35.91	+20.32	11.43	-10.25	33.66	+13.92	23.06	+3.31	17.30	+2.89	8.00	+1.45	0.51	-0.89	0	-0.39	149.22	+24.54
Cuttack	0	-0.27	0	-0.76	0	-0.11	1.33	+0.18	2.37	-1.58	22.93	+12.85	20.15	+8.44	7.38	-6.28	12.81	+3.24	11.62	+6.42	0.07	-1.46	0.80	+0.52	79.46	+20.19
Hazaribagh	0.27	-0.45	0.54	-0.59	0.22	-0.82	2.57	+2.08	2.97	+0.66	6.32	-2.81	14.74	+2.30	12.18	-0.96	5.73	-3.45	1.70	-1.42	0.02	-0.35	0	-0.21	47.26	-6.02
Patna	1.08	+0.55	0	-0.71	0	-0.47	0.53	+0.23	0.71	-0.96	5.50	-2.62	10.72	-1.22	7.35	-6.20	4.80	-3.53	0.56	-1.98	0.37	+0.09	0	-0.09	31.62	-16.91
Darjeeling	0.04	-0.51	0	-1.10	0.26	-1.58	11.24	+7.39	6.40	-2.86	21.42	-2.84	28.77	-3.54	25.04	-1.08	34.51	+16.13	1.68	-2.86	0.45	-0.33	0	-0.24	129.81	+7.14
Allahabad	0	-0.76	0	-0.58	0	-0.31	0	-0.15	1.58	+1.24	3.26	-1.70	30.79	+19.08	6.55	-5.15	18.50	+12.83	0	-2.32	1.46	+1.13	0	-0.23	62.14	+23.08
Lucknow	0	-0.77	0	-0.65	0	-0.35	0.01	-0.25	0.46	-0.55	4.14	-0.33	24.90	+13.45	7.03	-3.86	11.04	+3.97	0.03	-1.15	0.22	+0.03	0	-0.28	47.83	+9.26
Meerut	0.16	-1.12	0	-0.88	0	-0.62	0.10	-0.33	0.18	-0.47	8.30	+5.17	14.53	+5.44	11.33	+2.64	0.57	-5.10	0	-0.56	0.46	+0.31	0	-0.41	35.63	+3.67
Delhi	0.30	-0.74	0	-0.76	0	-0.52	0	-0.39	1.08	+0.50	3.83	+0.84	10.10	+2.57	5.01	-2.41	0	-4.78	0.05	-0.27	0.85	+0.74	0	-0.40	21.22	-5.62
Agra	0	-0.54	0	-0.48	0	-0.35	0	-0.24	0.91	+0.44	6.42	+4.07	19.65	+10.53	2.85	-5.30	0.93	-3.12	0.03	-0.73	1.31	+1.19	0	-0.27	32.10	+5.20
Jhansi	0	-0.59	0	-0.45	0	-0.29	0	-0.15	1.71	+1.33	6.91	+2.61	16.49	+4.92	3.53	-7.72	2.63	-3.29	0.63	-0.24	2.62	+2.45	0	-0.23	34.52	-1.65
Ajmer	0	-0.36	0	-0.25	0	-0.19	0.01	-0.17	1.82	+1.22	1.86	-0.55	5.42	-1.04	1.31	-5.44	0.05	-2.62	0	-0.33	0.82	+0.64	0	-0.28	11.29	-9.36
Sangor	0	-0.59	0	-0.44	0	-0.35	0	-0.15	1.36	+0.86	4.94	-1.53	22.92	+8.98	15.33	+1.68	5.69	-3.25	0.50	-0.52	1.24	+0.78	0	-0.44	49.98	+5.03
Jubbulpore	0	-0.80	0	-0.82	0	-0.57	0	-0.25	2.15	+1.62	5.83	-1.49	28.48	+10.86	11.10	-5.76	12.09	+4.42	0.02	-1.79	1.83	+1.26	0	-0.29	61.51	+6.39
Multan	0	-0.42	0.04	-0.32	0	-0.43	0	-0.27	1.40	+1.05	0.91	+0.29	0.42	-1.60	1.07	-0.91	0	-0.41	0	-0.05	0	-0.07	0	-0.22	3.84	-3.36
Lahore	0.44	-0.61	0.09	-0.85	0.30	-0.56	0.06	-0.48	0.88	+0.18	4.94	+3.26	6.47	+0.99	4.44	-0.89	0.05	-2.31	0.16	-0.09	0.68	+0.61	0	-0.36	18.51	-1.11
Peshawar	0.72	-0.84	1.84	+0.49	0.45	-1.80	0.64	-1.21	2.50	+1.68	0	-0.36	2.89	+1.65	1.32	-0.92	1.75	+0.94	1.70	+1.54	0.72	+0.44	0	-0.59	14.53	+1.02
Chakrata	6.13	+1.78	0.34	-3.97	0.19	-2.87	1.87	+0.08	1.39	-1.05	9.57	+1.45	17.39	-1.81	11.00	-7.66	1.47	-5.43	0.25	-0.71	3.27	+2.69	0	-1.28	52.87	-18.81
Indore	0	-0.28	0	-0.18	0	-0.06	0	-0.14	0.85	+0.27	6.49	+0.79	4.14	-5.73	4.08	-3.93	2.29	-4.24	0	-1.15	2.02	+1.61	0.06	-0.15	19.93	-13.19
Deesa	0	-0.11	0	-0.16	0	-0.08	0	-0.03	0.02	-0.41	7.49	+5.31	3.84	-5.16	1.71	-6.91	0	-3.54	0	-0.41	0	-0.10	0	-0.04	13.06	-11.64
Karachi	0	-0.52	0	-0.39	0	-0.33	0	-0.17	0	-0.07	1.57	+0.71	1.01	-1.93	0.82	-0.85	0	-0.43	0	-0.01	0.98	+0.94	0	-0.14	4.38	-3.18
Bombay	0	-0.10	0	-0.08	0	-0.07	0	-0.05	2.76	+1.92	27.86	+9.55	8.38	-15.88	7.71	-6.09	3.52	-6.98	0.22	-1.94	0.37	-0.04	0	-0.05	50.82	-19.81
Belgaum	0	-0.13	0	-0.05	0.36	+0.09	3.49	+1.89	4.43	+2.02	9.04	+0.90	22.71	+6.56	4.35	-5.32	2.39	-2.49	2.15	-2.52	0.74	-1.00	0.59	+0.22	50.30	+0.17
Nagpur	0	-0.42	0	-0.60	0.28	-0.29	0	-0.56	1.55	+0.72	9.38	+0.37	15.10	+1.26	23.43	+11.79	3.76	-4.49	2.28	+0.18	3.28	+2.57	0.08	-0.46	59.04	+10.07
Bellary	0	-0.11	0	-0.16	0	-0.20	0.56	-0.20	1.74	-0.22	0.24	-1.63	0.06	-1.70	2.17	-0.15	5.39	+0.31	3.24	-0.66	1.17	-1.02	2.38	+2.27	16.95	-3.56
Bangalore	0	-0.26	0	-0.17	0.33	-0.17	2.17	+0.84	7.03	+2.67	1.37	-1.52	3.51	-0.67	4.52	-0.86	6.32	-0.66	1.66	-4.24	1.23	-1.71	1.10	+0.62	29.24	-6.13
Madras	1.33	-0.06	0	-0.32	2.86	+2.67	0.05	-0.48	4.04	+2.97	0.23	-1.66	3.82	-0.12	5.99	+1.35	1.35	-3.64	16.72	+5.00	16.62	+2.37	13.83	+8.02	66.84	+16.10
Rangoon	0	-0.21	0	-0.22	0	-0.32	4.63	+3.00	14.95	+2.97	11.16	-6.88	28.30	+6.88	23.76	+3.89	14.31	-0.96	9.78	+2.87	0.28	-2.51	0	-0.37	107.17	+8.14
Akyab	0	-0.06	0	-0.15	0	-0.49	7.06	+4.99	10.35	-3.60	37.99	-8.95	58.06	+3.28	19.30	-25.89	19.87	-2.70	6.44	-4.47	0.45	-5.03	0	-0.76	159.54	-43.83

APPENDIX TO SECTION I.—GENERAL POPULATION—*contd.*

C.—Births.

Province.	Population under registration.	RATIO OF BIRTHS PER 1,000 OF POPULATION.			Number of males born to every 100 females.	Excess of births over deaths per 1,000 of population.	Excess of deaths over births per 1,000 of population.
		Maximum for any one district.	Minimum for any one district.	Mean for the province.			
Delhi . . .	500,539	...	...	41.60	108	7.90	...
Bengal Presidency	46,522,293	47.4	18.9	29.6	108	4.7	...
Bihar and Orissa .	34,002,189	48.8	28.5	35.6	105	11.9	...
Assam . . .	6,852,242	34.45	24.72	29.08	107	6.56	...
United Provinces of Agra and Oudh.	45,375,787	48.86	19.66	32.73	112	7.95	...
Punjab . . .	20,517,606	46.6	23.2	40.1	112	10.1	...
North-West Frontier Province.	2,135,573	38.3	21.7	26.9	130	7.1	...
Central Provinces and Berar.	13,912,760	53.87	36.07	43.90	105	16.63	...
Madras Presidency	41,002,696	43.9	19.2	33.7	104	9.3	...
Coorg . . .	163,838	...	...	18.88	105	...	11.94
Bombay Presidency.	19,165,614	50.50	15.40	34.66	109	11.00	...
Burma . . .	10,822,618	38.68	15.61	25.38	106	7.0	...
Ajmer-Merwara .	495,271	30.67	31.20	33.18	115	8.69	...

APPENDIX TO SECTION I.—GENERAL POPULATION—*contd.*

D.—Deaths.

Province.	Population under registration.	Area in square miles.	Average population per square mile.	RATIO OF DEATHS PER 1,000 OF POPULATION.			DEATH RATE BY SEX.	
				Maximum for any one district.	Minimum for any one district.	Mean for the province.	Male.	Female.
Delhi	500,539	7.92*	31,185	...	...	29.66	26.36	34.15
Bengal Presidency .	46,522,293	71,703	648	37.4	16.4	24.9	25.5	24.2
Bihar and Orissa . .	34,002,189	83,180	409	38.6	14.6	23.7	25.2	22.2
Assam	6,852,242	30,686	223	28.34	18.33	22.52	23.10	21.88
United Provinces of Agra and Oudh.	45,375,787	107,167	423	45.92	14.70	24.78	25.37	24.12
Punjab	20,517,606	97,280	211	52.5	18.6	30.0	28.9	31.2
North-West Frontier Province.	2,135,573	13,215	168	28.6	17.2	19.8	20.4	19.2
Central Provinces and Berar.	13,912,760	99,915	139.25	34.08	19.39	27.27	28.97	25.56
Madras Presidency .	41,002,696	126,240	324.8	47.9	15.9	24.4	25.1	23.7
Coorg	163,838	1,582	104	...	...	30.82	30.89	30.72
Bombay Presidency .	19,165,614	122,578	156	30.22	13.87	23.66	23.51	23.84
Burma	10,822,618	115,060	94.06	35.81	11.53	18.75	19.29	18.18
Ajmer-Merwara . .	495,271	2,711	182.71	25.38	22.20	23.50	22.99	24.22

* For Delhi city.

APPENDIX TO SECTION I.—GENERAL POPULATION—contd.

E.—Total number of deaths by months.

Province.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL.	Rate per 1,000 of population.	
														1925.	1924.
Delhi . .	1,031	965	1,218	1,293	1,373	952	843	1,240	1,782	1,523	1,265	1,364	14,849	29.66	33.57
Bengal Presidency	106,871	88,601	101,925	86,572	81,024	83,955	74,198	80,808	80,973	101,685	130,879	140,982	1,158,473	24.9	25.9
Bihar and Orissa	61,675	52,875	68,672	70,544	73,878	67,673	60,526	67,053	69,465	67,472	71,159	74,737	805,729	23.7	23.1
Assam . .	16,230	12,139	11,470	10,471	12,221	13,995	13,164	11,152	11,696	12,701	14,338	14,704	154,351	22.52	27.30
United Provinces of Agra and Oudh.	101,328	89,412	102,705	110,250	111,751	96,535	75,684	77,685	92,285	92,403	91,364	92,846	1,124,248	24.78	28.29
Punjab . .	57,596	48,963	57,150	54,787	52,407	40,640	32,980	39,739	64,268	59,401	51,727	55,174	614,852	29.97	43.43
North-West Frontier Province.	5,484	4,466	4,183	3,091	3,549	3,221	2,930	2,495	2,596	3,447	3,548	3,312	42,322	19.81	31.00
Central Provinces and Berar.	31,325	26,296	29,750	32,723	33,728	27,593	27,923	31,443	35,194	35,244	32,725	35,408	379,352	27.27	32.59
Madras Presidency	92,990	75,068	76,372	73,811	75,569	75,593	78,499	82,480	80,048	85,166	87,095	117,867	1,000,558	24.40	24.5
Coorg . .	499	399	381	420	378	603	580	412	256	344	357	390	5,049	30.82	41.08
Bombay Presidency	44,386	37,716	43,075	39,863	36,209	30,125	32,791	36,378	35,732	37,901	37,439	41,948	453,563	23.66	27.63
Burma . .	18,210	15,788	15,641	15,578	15,730	16,937	16,946	17,103	17,771	16,585	16,028	20,616	202,933	18.75	21.54
Ajmer-Merwara .	1,004	1,001	1,250	1,377	1,058	785	803	1,003	782	713	876	987	11,639	23.50	24.96
TOTAL	538,629	453,689	513,792	500,780	488,945	448,607	417,867	448,991	492,898	5,14,585	538,800	600,335	5,967,918	24.72	28.49

APPENDIX TO SECTION I.—GENERAL POPULATION—*contd.*

F.—Ratio of deaths from all causes according to months.

Province.	ANNUAL* DEATH RATE PER MILE FOR THE MONTH OF												Ratio for the Year.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Delhi	24.25	25.14	28.65	31.43	32.30	23.14	19.89	29.17	43.31	35.83	30.75	32.09	29.66
Bengal Presidency	27.05	24.83	25.80	22.64	20.51	21.96	18.78	20.45	21.18	25.73	34.23	35.68	24.9
Bihar and Orissa	21.36	20.27	23.80	25.24	25.58	24.21	20.96	23.22	24.86	23.37	25.46	25.88	23.7
Assam	27.89	23.09	19.71	18.60	21.12	24.85	22.60	19.16	20.76	21.83	25.45	25.26	22.52
United Provinces of Agra and Oudh.	26.29	25.68	26.65	29.56	29.00	23.20	19.64	20.16	24.74	23.98	24.50	24.09	24.78
Punjab	33.05	31.09	32.80	32.49	30.07	24.10	18.93	22.80	38.12	34.09	30.67	31.66	29.97
North-West Frontier Province	30.24	27.26	23.06	17.61	19.57	18.35	16.15	13.76	14.79	19.00	20.22	18.26	19.81
Central Provinces and Berar	26.51	24.64	25.18	28.62	28.54	24.13	23.63	26.61	30.77	29.83	28.62	29.97	27.27
Madras Presidency	26.70	23.87	21.93	21.90	21.70	22.43	22.54	23.68	23.75	24.46	25.84	33.85	24.40
Coorg	35.86	31.75	27.38	31.19	27.17	44.78	41.68	29.61	21.24	24.72	26.51	28.03	30.82
Bombay Presidency	27.27	25.65	26.46	25.32	22.24	19.13	20.14	22.35	22.70	23.28	23.77	25.77	23.66
Burma	19.81	19.02	17.02	17.51	17.11	19.04	18.43	18.61	19.98	18.04	18.02	22.43	18.75
Ajmer-Merwara	23.87	26.35	29.72	33.83	25.15	19.28	19.09	23.84	19.21	16.95	21.52	23.46	23.50
India	26.26	24.49	25.05	25.23	24.33	22.60	20.76	21.89	24.54	25.09	27.15	29.14	24.73

* The ratios in the statement have been calculated with reference to the number of days in each month.

APPENDIX TO SECTION I.—GENERAL POPULATION—contd.

G. —Deaths according to age.

Province.		RATIO PER 1,000 OF POPULATION.																60 YEARS AND UPWARDS.	
		UNDER ONE YEAR.*		1-5 YEARS.		5-10 YEARS.		10-15 YEARS.		15-20 YEARS.		20-30 YEARS.		30-40 YEARS.		40-50 YEARS.		50-60 YEARS.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Delhi . . . . .	.	193'50	185'66	Not available		10'6	9'7	14'2	16'1	15'1	16'8	11'5	17'4	22'2	19'2	34'1	28'7	71'1	59'1
Bengal Presidency . . . . .	.	186'71	176'38	35'8	32'5	13'7	11'7	8'7	6'8	9'8	13'3	11'8	13'0	20'2	15'6	35'3	30'8	68'5	56'0
Bihar and Orissa . . . . .	.	148'04	127'90	55'2	47'0	9'9	8'7	7'7	6'8	9'8	13'3	11'8	13'0	20'2	15'6	35'3	30'8	68'5	56'0
Assam . . . . .	.	184'53	163'45	30'08	26'37	10'11	8'77	8'41	7'61	11'63	14'97	13'94	16'70	15'87	17'74	22'32	18'99	27'23	55'85
United Provinces of Agra and Outh . . . . .	.	179'4	171'1	54'38	46'76	8'89	8'60	7'64	6'74	8'98	11'68	12'63	14'38	13'74	20'44	16'51	33'68	67'27	54'58
Punjab . . . . .	.	183'33	185'90	44'70	44'31	11'96	12'64	12'32	15'71	16'32	20'98	13'38	15'77	14'64	16'95	23'69	24'21	33'31	61'59
North-West Frontier Province . . . . .	.	139'86	138'20	31'3	25'8	8'2	8'1	8'5	9'4	10'0	11'4	10'3	11'5	14'7	15'2	20'4	18'3	25'7	47'2
Central Provinces and Berar . . . . .	.	219'28	188'86	65'18	53'06	8'47	7'76	6'17	6'51	9'75	11'46	9'97	10'26	11'68	10'31	16'21	12'13	25'96	63'47
Madras Presidency . . . . .	.	180'5	171'0	40'3	38'3	9'7	9'1	6'0	6'0	9'5	11'4	10'5	12'9	12'5	18'5	14'6	28'7	24'6	74'1
Coorg . . . . .	.	291'12	266'15	37'73	55'34	31'01	13'12	10'40	6'74	15'01	15'67	23'53	25'27	27'05	27'93	35'12	31'15	40'15	68'73
Bombay Presidency . . . . .	.	167'69	155'81	50'4	47'80	7'40	8'00	5'91	7'39	8'24	11'75	9'81	11'83	12'97	13'00	18'01	14'24	29'64	23'22
Burma . . . . .	.	198'77	178'64	24'47	23'23	7'75	7'71	5'63	5'31	7'90	7'35	9'91	10'13	13'31	12'65	15'20	13'88	22'25	18'24
Ajmer-Merwara . . . . .	.	215'6	197'9	40'20	45'35	8'89	8'45	5'83	8'49	8'47	13'09	7'89	12'15	8'32	10'53	12'25	11'45	25'77	21'86
TOTAL . . . . .	.	181'21	167'02	45'45	40'79	10'27	9'56	8'10	8'28	10'77	13'88	13'23	13'25	14'59	14'09	20'27	16'53	31'04	68'18

* Calculated on the number of births during 1925.

APPENDIX TO SECTION I.—GENERAL POPULATION—*contd.*

H.—Deaths in Towns and Rural Circles compared.

Province.	NUMBER OF REGISTRATION CIRCLES.			POPULATION.		RATIO OF DEATHS PER 1,000 OF POPULATION.		
	Rural.	Town.	TOTAL.	Rural.	Town.	TOTAL.	Rural.	Town.
Delhi	12	4	16	198,518	302,021	500,539	33.90	26.88
Bengal Presidency	519	116	635	43,418,456	3,103,837	46,522,293	25.0	23.9
Bihar and Orissa	242	58	300	32,827,150	1,175,089	34,002,189	23.7	23.2
Assam	121	23	144	6,703,067	149,175	6,852,242	22.50	23.63
United Provinces of Agra and Oudh	1,091	90	1,181	42,364,763	3,011,024	45,375,787	24.01	35.55
Punjab	415	158	573	18,443,502	2,074,104	20,517,606	29.70	32.30
North-West Frontier Province	65	13	78	1,923,148	212,425	2,135,573	19.29	24.55
Central Provinces and Berar	318	107	425	12,562,352	1,350,508	13,912,760	26.82	31.39
Madras Presidency	231	295	526	35,848,911	5,153,785	41,002,696	23.7	29.2
Coorg	7	2	9	154,997	8,841	163,838	29.39	55.76
Bombay Presidency	250	115	365	15,421,329	3,743,785	19,165,114	22.84	27.04
Burma	240	66	306	9,596,599	1,228,019	10,824,618	16.77	34.22
Ajmer-Merwara	Not available.	Not available.	22	Not available.	Not available.	495,271	Not available.	Not available.
								23.50

APPENDIX TO SECTION I.—GENERAL POPULATION—*contd.*

I.—Deaths from Cholera in the different provinces in India from 1894 to 1925.

Year.	Delhi.	Bengal.	Bihar and Orissa.	Assam.	United Provinces of Agra and Oudh.	Punjab.	(a) North-West Frontier Province.	Central ¶ Provinces.	Barar.	Madras.	Coorg.	Bombay.	Lower Burma, †	Upper Burma.	Ajmer-Merwara.	Rajputana.	Central India.	Hyderabad (cantonment stations.)	Mysore.
1894 . .	...	236,160	...	13,497	178,079	113	...	7,043	3,432	24,280	3	83,588	7,428	...	...	2	5,210	1,863	328
1895 . .	...	177,087	...	18,063	51,565	549	...	15,506	11,018	21,172	...	8,890	5,150	...	289	1,049	6,043	467	2,384
1896 . .	...	226,624	...	17,042	69,147	5,146	...	52,985	12,364	47,947	49	35,404	2,959	...	12	3,797	15,766	525	2,100
1897 . .	...	196,247	...	33,240	44,208	622	...	57,181	10,122	143,455	106	57,109	8,538	...	19	1,406	13,202	1,039	4,348
1898 . .	...	65,020	...	11,149	2,508	533	...	7	...	65,444	3	4,368	2,972	...	1	6	2	6	1,593
1899 . .	...	107,678	...	6,380	8,142	1,816	...	1176	541	29,082	...	8,570	4,942	2,050	1	496	...	...	123
1900 . .	...	345,878	...	23,761	84,060	28,260	...	63,114	18,375	60,664	...	163,989	3,440	41	4,942	28,719	20,450	3,813	779
1901 . .	...	110,753	...	7,408	53,095	180	117	49	17	81,370	58	13,800	3,552	†	50	6	72	1	11,351
1902 . .	...	150,971	...	12,658	25,100	371	...	28	16	29,769	...	3,230	1,844	57	32	1,519	12	...	218
1903 . .	...	203,405	...	8,360	47,159	14,688	1,354	437	...	27,393	...	1,825	5,346	2,887	...	236	1,110	...	99
1904 . .	...	137,701	...	5,588	6,617	716	1	2,967	...	23,109	...	13,156	2,472	508	...	1	150	...	471
1905 . .	...	146,339	...	**142,312	121,790	2,197	800	1,217	...	16,888	...	5,396	3,511	1,836	...	8	27	64	628
1906 . .	...	192,596	...	108,278	140,549	4,232	...	38,768	...	142,811	10	46,119	5,529	2,343	284	4,714	10,147	1,061	7,222
1907 . .	...	205,702	...	77,181	22,438	487	266	4,291	...	81,565	187	7,656	7,964	414	1	64	41	1	4,972
1908 . .	...	268,908	...	59,329	83,544	12,297	2,845	9,048	...	141,970	114	1,759	19,338	2,575	...	737	1,730	937	2,140
1909 . .	...	56,711	...	71,737	21,823	1,518	134	7,687	...	30,424	99	28,714	4,041	7,348	...	408	1,421	164	1,629
1910 . .	...	162,611	...	117,960	102,402	2,131	1,605	5,310	...	32,594	56	3,694	1,834	177	2	8	2,864	2	1,812
1911 . .	...	124,560	...	39,248	117,689	1,260	12	2,096	...	58,174	6	5,817	2,595	1,596	50	85	1,054	803	210
1912 . .	406	95,467	77,023	(b) 14,303	18,894	1,893	1,320	34,312	...	92,467	...	64,505	6,013	1,173	13	414	9,080	1,190	6,748
1913 . .	37	78,898	70,379	16,407	60,427	5,811	175	15,296	...	37,750	192	5,134	3,704	635	...	4,095	2,823	(c) 1,322	8,062
1914 . .	12	89,224	32,115	9,370	32,408	6,656	2,300	20,345	...	68,449	...	17,779	2,042	31	9	1,627	10,075	(c) 5,898	849
1915 . .	92	130,670	88,349	26,970	90,568	13,196	932	5,661	...	30,093	...	377	8,209	9,388	3	1,981	795	(c) 2,072	178
1916 . .	69	70,836	90,582	13,099	33,360	1,651	194	39,201	...	16,735	1	19,841	1,467	206	361	5,075	5,474	(c) 1,475	137
1917 . .	12	45,021	109,620	10,953	21,440	1,365	...	69	...	58,939	32	17,013	1,886	28	12	69	589	(c) 2,579	7,388
1918 . .	3	62,379	205,584	14,077	119,746	257	31	3,35	...	122,263	1	8,834	3,713	556	7	3	486	(c) 7,200	3,153
1919 . .	66	124,940	104,727	33,080	81,365	9,561	4,400	63,081	...	98,262	157	51,551	9,327	3,983	59	842	8,309	(c) 13,321	2,306
1920 . .	7	54,169	26,341	2,421	6,952	138	2	3,40	...	91,139	6	2,047	2,034	782	1	508	278	(c) 57	229
1921 . .	635	80,547	90,688	12,629	149,067	19,215	4,285	58,33	...	27,064	...	3,521	3,435	856	35	2,750	5,079	(c) 1,381	25
1922 . .	6	51,712	26,905	16,210	2,330	128	92	6	...	16,502	4	2,768	4,080	967	2	...	...	(c) 3,288	46
1923 . .	12	41,483	8,198	3,728	2,591	11	2	1,09	...	5,169	...	9,221	1,488	...	9	9	62	(c) 1,174	79
1924 . .	121	48,514	77,430	19,182	67,000	3,351	9	9,70	...	51,971	24	8,236	8,083	...	32	644	1,407	(c) 3,354	7,669
1925 . .	50	34,276	17,336	6,233	7,653	8,049	116	12	...	44,815	4	57	1,932	...	...	...	43	(c) 22	...

† Statistics from 1894 to 1898 not available.

‡ Statistics not available.

§ Including 30 deaths in cantonments.

|| Excluding Zamindaris.

¶ Including Barar from 1902.

** Eastern Bengal and Assam.

(a) 1894—1900 included in the Punjab.

(b) Assam only.

(c) For the whole State including cantonment stations.

APPENDIX TO SECTION I.—GENERAL POPULATION—*contd.*

J.—Deaths from Cholera in British Provinces, by months, during the year 1925.

Province.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Ratio per 1,000 of population.	
														1925.	1924.
Delhi . . .	...	...	...	...	3	6	7	20	4	1	9	...	50	·09	·24
Bengal Presidency	4,357	2,823	4,231	5,155	3,430	1,632	943	759	647	1,631	4,631	4,037	34,276	·7	1·04
Bihar and Orissa .	315	250	902	3,307	4,922	2,593	1,510	999	544	971	738	285	17,336	0·5	2·2
Assam . . .	1,200	425	347	341	819	995	554	315	247	229	398	363	6,233	·90	2·79
United Provinces of Agra and Oudh.	35	78	50	199	313	278	327	1,364	1,674	782	2,160	493	7,653	·17	1·43
Punjab . . .	...	...	...	426	1,013	716	223	271	340	59	1	...	3,049	·15	0·16
North-West Frontier Province.	...	...	...	...	26	77	12	1	...	...	...	...	116	·05	·004
Central Provinces and B. nar.	7	...	14	18	70	6	6	2	1	...	...	...	124	·01	·70
Madras Presidency	8,340	5,563	4,575	3,893	2,532	1,933	2,091	1,700	1,894	2,150	3,043	7,111	44,815	1·1	1·3
Coorg . . .	1	3	...	...	...	...	...	...	...	...	...	...	4	·03	0·15
Bombay Presidency	7	...	1	6	2	5	17	12	1	4	2	...	57	·00	0·43
Burma . . .	208	97	80	224	292	266	132	178	137	24	46	200	1,932	·18	·75
Ajmer-Merwara .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·01
TOTAL . . .	14,468	9,239	10,200	13,569	13,412	8,507	5,872	5,521	5,489	5,851	11,028	12,489	115,645	·43	1·22

APPENDIX TO SECTION I.—GENERAL POPULATION—*contd.**K.—Details of the distribution and occurrence of Cholera during the year 1925.*

Province.	Mortality in 1925.	Mean mortality of previous 5 years.	Urban mortality.	Rural mortality.	Percentage of villages attacked.	Maximum mortality in any one district excluding towns.	Maximum mortality in any one town.	Month of maximum mortality.
Delhi	·09	·30	·10	·09	·94	·09	·12	August.
Bengal Presidency	·7	1·2	·9	·7	8·95	1·3	3·4	April.
Bihar and Orissa	0·5	1·3	·4	·5	2·83	4·0	3·6	May.
Assam	·90	1·58	·39	·92	4·27	3·63	2·09	January.
United Provinces of Agra and Oudh	·17	1·01	·19	·17	1·03	1·30	2·08	November.
Punjab	·15	·22	·28	·13	1·71	1·24	10·16	May.
North-West Frontier Province	·05	·41	·16	·04	·62	·36	1·47	June.
Central Provinces and Berar	·01	1·04	·01	·01	·09	·05	·53	May.
Madras Presidency	1·1	·7	1·5	1·0	9·43	4·0	24·7	January.
Coorg	·03	·17	·45	...	11·11	...	1·26	February.
Bombay Presidency	·00	·27	·01	·00	·12	·01	·09	July.
Burma	·18	·41	·19	·18	3·15	1·92	3·43	May.
Ajmer-Merwara . . . . .	...	·02	...	...	...	...	...	...

APPENDIX TO SECTION I.—GENERAL POPULATION—*contd.*

L.—Small-pox mortality—1925.

Provinces, Districts, Towns.	Delhi.	Bengal Presi- dency.	Bihar and Orissa.	Assam.	United Provinces of Agra and Oudh.	Punjab.	North- West Frontier Province.	Central Provinces and Berar.	Madras Presi- dency.	(Coorg.	Bombay Presi- dency.	Burma.	Ajmer- Mewara.	Registra- tion India.
I.—MORTALITY BY PROVIN- CES—														
A.—DEATHS BY MONTHS—														
January	7	990	483	82	273	358	28	100	1,894	4	452	196	147	5,014
February	1	1,723	737	118	412	338	14	355	2,317	14	758	382	166	7,335
March	18	3,587	1,735	224	930	420	74	684	2,781	1	1,187	710	289	12,595
April	18	3,398	2,036	214	1,861	527	8	766	2,528	...	945	908	230	13,439
May	23	2,216	1,967	306	2,216	966	41	408	1,940	...	730	659	102	11,574
June	17	1,572	1,774	320	1,573	1,088	32	204	1,409	1	541	359	106	8,996
July	12	968	1,337	331	820	732	25	120	1,554	3	316	284	69	6,572
August	11	776	859	321	268	416	33	107	1,563	3	174	118	36	4,715
September	11	402	537	179	156	263	7	41	1,237	...	93	91	18	3,035
October	1	326	464	84	122	339	101	36	990	...	100	74	5	2,683
November	4	563	680	249	141	538	83	99	946	...	102	40	11	3,464
December	12	965	1,763	317	571	1,063	140	135	1,349	...	236	42	22	6,615
TOTAL	130	17,436	14,832	2,745	9,373	7,038	586	3,145	20,478	26	5,644	3,852	1,151	85,986
B.—ANNUAL DEATH RATES :—														
Ratio per 1,000 of population, 1926.	26	4	4	40	21	34	27	23	5	16	29	36	232	36
Ratio per 1,000 of population, 1924.	25	1	2	24	06	20	10	07	4	42	68	23	125	28
Difference	+01	+3	+2	+16	+15	+14	+17	+16	+1	-26	-29	+13	+107	+13

mean ratio per 1,000 during 1930-34.	10	3	2	34	05	21	28	09	4	133	21	20	63	13
Difference	+18	+1	+2	+08	+16	+13	-01	+15	+1	-116	+08	+16	+189	+13
II.—DISTRICT MORTALITY EXCLUDING TOWNS—														
Number of districts affected		26	20	8	43	23	5	13	26	1	27	30		237
Highest district ratio		1.2	3.9	2.18	65	1.30	28	1.31	1.2	13	1.15	1.47		3.9
Name of that district		Howrah.	Puri	Sibsagar	Bijpur	Belum	Peshawar	Anraoti	Anantapur	Coorg	Broach	Myingyan		Puri
Lowest district ratio		01	03	04	01	004	01	01	0.1	...	01	01		004
Name of that district		Jalpaiguri	Palaman	Sylhet	Bara Banki	Karnal	Bannu	Chhindwara	Malabar	...	Kaira	Prome		Karnal
Number of districts without mortality.		...	1	...	...	1	...	4	...	...	...	...		6
District death rate per 1,000 of population.		2	4	40	15	27	14	19	0.5	13	24	28		30
III.—TOWN MORTALITY—														
Number of towns affected		88	39	11	71	101	7	50	164	2	53	47		633
Highest town ratio		5.1	3.1	3.83	12.09	11.31	5.44	11.13	11.8	63	5.06	7.53		13.09
Name of that town		Bankura	Jhalda.	Golaghat	Sherkot	Dausya	Bannu	Chandpur Railway.	Pallakollu	Viralpet	Yawal	Myinnu		Sherkot
Lowest town ratio		01	01	06	02	03	06	05	0.01	53	03	06		01
Name of that town		Dacca	Bhagalpur	Dibrugarh	Bareilly	Bhiwani	Kohat	Baipur	Madura	Merotra	Dharwar	Akyab		Madura
Number of towns without mortality.		23	19	12	19	57	6	57	131	...	62	19		410
Town death rate per 1,000 of population.		2.0	5	32	94	1.01	1.47	55	0.6	57	52	1.10		9.91
IV.—INFANTILE MORTALITY—														
Children under one year		1,053	1,378	332	3,137	1,944	130	917	7,664	...	1,375	330		13,380
Children 1—10 years		3,327	2,479	561	4,266	3,760	374	1,870	7,487	...	2,646	1,023		27,793
Percentage of children in total small-pox mortality.		25.28	26.83	32.53	78.98	81.04	86.01	88.63	73.94	...	71.25	35.13		94.40

• Excluding Delhi and Ajmer-Merwara.

APPENDIX TO SECTION I.—GENERAL POPULATION—contd.

M.—Fever mortality—1925.

Provinces, Districts, Towns.	Delhi.	Bengal Presi- dency.	Bihar and Orissa.	Assam.	United Provinces of Agra and Oudh.	Punjab.	North- West Frontier Province.	Central Provinces and Berar.	Madras Presi- dency.	Coorg.	Bombay Presi- dency.	Burma.	Ajmer- Merwara.	Registra- tion India.
I.—MORTALITY BY PROVIN- CES—														
A.—DEATHS BY MONTHS—														
January	499	79,712	42,990	2,615	78,332	37,544	4,754	15,586	27,528	422	19,424	6,548	605	333,559
February	502	65,216	35,577	7,441	67,160	30,191	3,873	13,258	22,813	315	15,390	5,437	634	267,807
March	656	73,587	45,841	7,492	73,832	32,857	3,531	16,877	24,554	325	17,899	5,477	768	302,836
April	735	61,264	47,954	6,790	51,732	29,611	2,696	18,222	24,239	351	17,948	5,161	862	297,870
May	828	69,059	50,313	7,833	89,770	33,304	2,847	20,293	24,638	334	15,267	5,083	726	310,352
June	539	68,821	46,892	9,206	70,545	27,371	2,514	15,720	25,065	466	11,675	5,691	549	280,014
July	420	56,397	40,470	8,511	59,963	20,965	2,402	14,604	25,453	465	12,339	5,325	551	247,545
August	622	61,463	44,573	7,304	58,806	25,741	1,832	15,955	25,729	331	13,253	5,497	772	261,948
September	1,218	62,701	47,945	7,441	72,723	47,305	2,166	18,628	26,452	223	13,279	5,837	609	304,532
October	1,030	79,031	48,936	8,295	74,928	43,959	2,888	19,280	28,245	270	15,029	5,403	540	288,068
November	736	101,685	52,354	9,084	73,333	36,567	2,654	17,906	26,250	302	15,396	5,532	664	342,893
December	693	109,649	53,449	9,063	74,360	34,630	2,771	19,648	35,380	307	17,090	7,738	737	366,535
TOTAL	8,465	874,228	557,224	96,015	875,594	401,775	35,218	204,667	316,406	4,116	133,764	68,635	8,037	3,686,264
B.—ANNUAL DEATH RATES.—														
Ratio per 1,000 of population, 1925.	16.97	18.9	16.4	14.30	19.30	19.68	16.61	14.71	7.7	25.12	9.68	6.35	16.22	15.06
Ratio per 1,000 of population, 1924.	16.06	19.6	19.3	16.68	20.89	22.04	21.40	17.33	7.9	34.20	11.20	6.96	18.03	16.80
Difference	+ .91	— .8	— 2.9	— 2.32	— 1.59	— 2.46	— 4.79	— 2.61	— .2	— 9.08	— 1.61	— .61	— 1.81	— 1.74

Mean ratio per 1,000 during 1920—1924.

17.07	21.2	19.8	16.10	23.70	19.24	20.23	19.92	7.9	23.27	11.43	7.92	18.63	17.49
— .10	— 2.4	— 3.4	— 1.80	— 4.40	+ .34	— 3.61	— 5.21	— .2	+ 1.86	— 1.34	— 1.57	— 2.41	— 3.48

II.—DISTRICT MORTALITY EX- CLUDING TOWNS—

Number of districts affected	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Highest district ratio	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Name of that district	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lowest district ratio	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Name of that district	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Number of districts without mortality.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
District death rate per 1,000 of population.	...	...	...	...	...	...	...	...	...	...	...	...	...	...

III.—TOWN MORTALITY—

Number of towns affected	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Highest town ratio	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Name of that town	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lowest town ratio	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Name of that town	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Number of towns without mor- tality.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Town death rate per 1,000 of population.	...	...	...	...	...	...	...	...	...	...	...	...	...	...

* Excluding Delhi and Ajmer-Merwara.

APPENDIX TO SECTION I.—GENERAL POPULATION—*contd.*

N.—Dysentery and Diarrhoea mortality—1925.

Provinces, Districts, Towns.	Delhi.	Bengal Presi- dency.	Bihar and Orissa.	Assam.	United Provinces of Agra and Oudh.	Punjab.	North- West Frontier Province.	Central Provinces and Berar.	Madras Presi- dency.	Coorg.	Bombay Presi- dency.	Burma.	Ajmer- Merwara.	Registra- tion India.
I.—MORTALITY BY PROVIN- CES.														
A.—DEATHS BY MONTHS—														
January	28	2,015	2,413	366	566	649	22	1,823	6,700	20	1,602	497	7	17,308
February	19	1,615	2,405	574	434	494	10	1,339	5,366	13	1,248	367	6	13,790
March	16	1,877	3,019	562	550	525	4	1,569	5,398	16	1,312	349	10	15,197
April	32	1,724	2,220	603	1,049	751	6	1,759	5,238	18	1,461	439	11	15,301
May	23	1,636	1,947	760	1,522	932	31	1,827	5,671	5	1,660	584	10	16,468
June	21	1,622	1,922	884	1,299	720	21	1,736	5,956	62	1,623	778	8	16,651
July	27	1,452	1,910	991	1,116	669	13	1,991	6,151	14	2,280	958	21	17,573
August	53	1,672	2,160	702	1,216	843	15	2,692	7,024	6	2,614	735	17	19,749
September	44	1,467	1,893	844	1,094	981	10	2,825	6,731	3	2,151	968	11	18,692
October	35	1,991	1,628	776	916	1,108	14	2,690	6,579	26	1,750	504	15	18,040
November	39	2,363	1,882	867	814	891	7	1,907	7,458	4	1,445	370	13	18,060
December	30	2,412	2,050	759	759	912	10	1,837	10,773	8	1,528	553	13	21,693
TOTAL	357	21,836	25,319	9,188	11,335	9,475	163	24,024	78,935	194	20,643	6,901	142	208,412
B.—ANNUAL DEATH RATIOS :—														
Ratio per 1,000 of population, 1925.	71	5	7	134	25	46	08	173	19	118	108	63	29	96
Ratio per 1,000 of population, 1924.	74	5	7	162	28	58	12	235	18	118	151	79	41	96
Difference	-03	...	...	-28	-01	-12	-04	-62	+1	...	-43	-16	-12	-09
Mean ratio per 1,000 during 1920- 1924.	82	5	7	155	29	50	013	225	15	82	134	83	049	...
Difference	-11	...	...	-21	-04	-04	-05	-32	+4	+36	-26	-20	-20	...

II.—DISTRICT MORTALITY EXCLUDING TOWNS—

Number of districts affected	26	21	8	234	44	29	5	22	26	1	27	30	239
Highest district ratio	24	63	234	448	448	3196	07	675	67	2592	232	156	3196
Name of that district	Howrah	Cuttack	Dattang	Garhwal	Karnal	Hazara	Akola	The Nil- giris	Coorg	Ahmed- nagar	Larkana	Kyaukse	Karnal
Lowest district ratio	01	01	32	01	01	01	01	16	06	02	05	05	01
Name of that district	Nalda	Shahabad	Goalpara	Bara Banki	Hoshiar- pur	D. I. Khan	Bhandara	Nellore	...	...	...	...	Hoshiar- pur
Number of districts without mortality.	...	...	...	4	...	...	...	...	...	...	...	...	...
District death rate per 1,000 of population.	3	7	129	12	38	03	171	18	2592	98	41	...	74*

III.—TOWN MORTALITY—

Number of towns affected	112	48	23	86	133	9	107	285	2	106	63	974
Highest town ratio	54	73	684	991	765	114	893	129	1958	400	654	1958
Name of that town	Baranagar	Puri	Mangaldai	Atranli	Beri	Kulachi	Ner- Pugai	Tirumang- alam	Virajpet	Kirkee Centt.	Mawlam- yaingyun	Virajpet
Lowest town ratio	1	07	80	08	13	16	12	1	652	16	15	06
Name of that town	Muklag- acha.	Motihari	Goalpara	Kairana	Mehm	Kohat	Dhaman- gaon	Kalahasti	Mercara	Doolali Centt.	Salin	Kairana
Number of towns without mortality.	4	10	...	4	25	4	...	10	...	9	3	69
Town death rate per 1,000 of population.	23	9	349	205	135	46	188	33	1120	146	236	216*

* Excluding Delhi and Ajmer-Merwara.

APPENDIX TO SECTION I.—GENERAL POPULATION—*contd.*

O.—Plague mortality—1925.

Province or State.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL.	
													1925.	1924.
BRITISH PROVINCES.														
Delhi	23	26	17	11	1	...	...	...	...	...	...	...	80	2,426
Bengal Presidency	1	...	...	...	...	2	5	...	...	...	...	1	9	35
Bihar and Orissa	978	1,467	2,321	1,194	283	22	3	23	25	39	58	351	6,788	10,792
Assam . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...
United Provinces of Agra and Oudh.	6,661	8,894	14,714	11,199	3,238	336	141	276	173	254	784	2,431	49,091	56,210
Punjab	4,455	5,093	10,040	11,865	3,938	366	107	196	158	47	295	1,060	37,680	261,261
North-West Frontier Province .	65	15	43	15	75	1	1	...	1	1	...	...	217	11,367
Central Provinces and Berar . .	1,367	1,055	908	270	14	1	2	200	639	300	215	264	5,323	11,061
Madras Presidency	773	409	178	36	15	28	30	44	52	118	115	216	2,014	3,922
Coorg . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	8
Bombay Presidency	1,372	1,433	1,106	268	119	142	282	929	1,069	1,941	1,775	1,575	12,601	9,314
Burma	339	478	514	348	215	254	325	432	220	124	286	469	4,064	5,491
Ajmer-Merwara . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	1
TOTAL { 1925	16,024	18,892	29,839	25,216	7,887	1,161	896	2,135	2,927	2,824	3,528	6,387	117,717	...
TOTAL { 1924	18,691	33,828	74,680	105,877	74,728	27,029	6,610	1,174	1,668	2,937	5,242	9,939	...	361,843
INDIAN STATES, &c.														
Bengal Indian States . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bihar and Orissa Indian States .	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Assam Indian States . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...
United Provinces of Agra and Oudh Indian States.	58	123	123	20	...	...	...	...	...	...	...	...	344	1,168
Punjab Indian States	401	309	506	881	141	12	22	58	38	32	67	157	2,624	8,049
Jammu and Kashmir States . .	25	26	41	106	34	1	10	30	22	...	...	...	296	2,464
Baluchistan	1	...	...	...	18	...	...	...	...	...	...	...	19	7
Rajputana	38	234	332	212	89	4	12	22	2	...	...	32	977	53
Central India	74	37	1	...	...	...	...	...	...	...	6	8	126	627
Indian States in Central Provinces .	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Baroda State . . . . .	...	...	...	...	1	...	1	...	3	...	...	...	5	11
Bombay Presidency Indian States .	126	81	138	18	40	68	131	151	315	242	133	120	1,644	1,049
Burma Indian States . . . . .	...	...	...	...	...	...	...	7	10	13	15	...	45	78
Hyderabad State	1,848	504	513	129	27	...	37	775	1,455	1,217	1,530	2,743	11,078	19,806
Mysore State	184	211	88	74	159	232	505	665	725	615	697	789	4,943	3,618
Bangalore, Civil and Military Station	1	...	...	...	...	...	...	...	...	...	...	...	1	19
Madras Indian States . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	1
TOTAL { 1925	2,756	1,825	1,742	1,520	508	317	713	1,708	2,572	2,124	2,447	3,864	22,101	...
TOTAL { 1924	5,498	4,498	4,884	4,090	1,705	478	257	576	1,784	4,747	4,840	3,617	...	36,914
GRAND TOTAL { 1925	18,790	20,717	31,581	26,736	8,395	1,469	1,614	3,813	5,499	4,948	5,975	10,261	139,818	...
GRAND TOTAL { 1924	24,159	37,826	79,514	109,937	76,433	27,507	6,867	1,770	3,442	7,684	10,082	12,556	...	398,757
Calcutta City	1	2	5	1	9	33
Bombay City	2	8	38	48	39	19	7	9	2	1	...	1	174	499
Madras City

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APPENDIX TO SECTION I.—GENERAL POPULATION—concl'd.

P.—Mortality from Respiratory Diseases—1925.

Provinces, Districts, Towns.	Delhi.	Bengal Presi- dency.	Bihar and Orissa.	Assam.	United Provinces of Agra and Oudh.	Punjab.	North- West Frontier Province.	Central Provinces and Berar.	Wadras Presi- dency.	Coorg.	Bombay Presi- dency.	Burma.	Ajmer- Merwara.	Registra- tion India.
I.—MORTALITY BY PROVIN- CES—														
A.—Deaths by months—														
January	371	2,651	547	580	2,441	5,762	312	3,316	6,068	26	8,457	874	33	31,278
February	318	2,515	691	612	2,347	5,364	227	2,928	5,145	12	8,024	809	20	28,712
March	380	2,896	764	501	2,560	5,630	161	2,594	5,078	13	9,514	878	35	31,304
April	368	2,352	647	427	2,675	4,551	130	2,760	5,111	17	7,217	826	19	27,000
May	367	1,926	526	433	2,305	4,301	134	2,594	5,490	14	6,341	878	12	26,311
June	270	1,824	504	384	1,761	3,478	132	2,028	5,940	15	5,197	859	17	22,396
July	274	1,875	482	395	1,790	2,939	80	2,240	5,619	27	5,560	865	10	22,156
August	386	1,964	604	412	2,061	3,245	95	2,271	6,536	23	6,184	865	16	24,555
September	365	1,814	483	480	1,977	4,277	74	2,535	6,625	8	5,957	895	9	25,509
October	344	2,112	501	451	1,827	4,203	79	2,551	6,999	19	6,434	886	20	26,425
November	352	2,610	647	433	1,981	4,400	95	2,685	7,308	29	6,403	881	23	27,746
December	508	2,886	703	475	2,562	6,228	110	3,108	8,682	34	7,769	1,064	39	34,162
TOTAL	4,288	27,325	6,918	5,802	26,177	54,370	1,549	31,710	74,591	237	83,047	10,590	253	226,497
2.—Annual death rates—														
Ratio per 1,000 of population, 1925.	8.58	.6	.2	.81	.58	2.65	.72	2.28	1.8	1.45	4.33	.98	.51	1.35
Ratio per 1,000 of population, 1924.	8.62	.6	.3	.98	.80	2.66	1.20	2.67	1.6	1.32	4.75	1.03	.53	1.38
Difference	—0.04	...	...	—0.17	—0.02	—0.01	—0.48	—0.39	+2	+0.13	—0.42	—0.05	—0.01	—0.03
Mean ratio per 1,000 during 1920-1924.	9.28	.6	.2	1.30	.62	2.35	.83	2.78	1.1	.3	4.05	1.07	.39	1.32
Difference	—0.70	...	...	—0.40	—0.04	+0.30	—0.11	—0.50	+7	+1.06	—32	—0.09	+0.12	+0.03
III.—DISTRICT MORTALITY EX- CLUDING TOWNS—														
Number of districts affected.	...	26	21	8	48	29	5	22	26	1	27	30	...	243
Highest district ratio	...	1.9	1.7	2.14	5.02	14.28	54	8.84	4.4	.33	9.53	.76	...	14.28
Name of that district	...	Howrah	Puri	Lakhim- pur.	Hanir- pur.	Ambala	Hazara	Jubbul- pur.	Godavari West.	Coorg	Surat	Sagging	Not available.	Ambala
Lowest district ratio	...	.02	.006	.12	.01	.33	.17	.10	.05	...	.21	.00	...	.06
Name of that district	...	Noakhali	Dar- bhanga.	Goalpara	Jaunpur	Dera Ghazi Khan	Bannu	Balaghat	Ganjam	...	Larkana	Pegu	...	Pegu.
Number of districts without mortality.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
District death rate per 1,000 of population.	...	.3	.1	.77	.16	2.30	.33	2.07	1.6	.32	3.31	.23	...	.98
III.—TOWN MORTALITY—														
Number of towns affected	...	115	53	21	85	156	13	107	270	2	112	65	...	998
Highest town ratio	...	10.9	2.9	6.81	14.30	13.84	8.17	14.66	12.5	34.11	15.24	13.88	...	34.11
Name of that town	...	Khairpai	Puri	Terpur	Farrukha- bad Cum Fatehgarh	Dina- nagar.	Peshawar	Saugor	Madras	Virajpet	Ahmed- abad	Minbu	Not available.	Virajpet
Lowest town ratio	...	.2	.04	.29	.07	.34	.13	.17	.1	14.10	.26	.10	...	.04
Name of that town	...	Comilla	Sessaram	Manvi bazar.	Sherkot	Sangia	Lakki	Siras- gaon.	Kollegal	Merara	Hydera- bad Canit.	Letpadan	...	Sessaram.
Number of towns without mortality.	...	1	5	2	5	3	...	...	25	...	1	1	...	45
Town death rate per 1,000 of population.	...	5.1	.7	2.65	6.60	5.72	4.34	4.27	3.4	21.26	8.51	6.86	...	5.38

*Excluding Delhi and Ajmer-Merwara.

APPENDIX TO SECTION III.

VACCINATION.

APPENDIX TO SECTION III.—VACCINATION.

Statement No. 1.—Total Primary Vaccinations and Re-vaccinations, successful cases among children, cost of the Special Vaccination Department, etc., during the official year 1925-26.

Province.	Number of operations performed by the Special and Dispensary Staffs combined.		Percentage of successful cases* to total operations.		Number of children successfully vaccinated by the Special and Dispensary Staffs combined.		Average number of persons vaccinated by each Special Staff.	Total cost of the Special Department.		Average cost of each successful case vaccinated by the Special Department.
	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Under one year.	1 to 6 years.		Rs.	A. P.	
Delhi	16,523	10,778	97.80	59.18	12,784	2,054	2,482	6,263	0 0	0 4 9
Bengal Presidency	1,751,091	1,279,087	96.20	55.50	317,381	1,074,773	1,713	4,52,901	13 4	0 3 2
Bihar and Orissa	1,086,138	211,630	99.65	70.06	378,903	661,753	960	1,54,664	3 0	0 2 0
Assam	347,254	154,097	96.69	73.32	68,239	219,131	1,013	98,203	9 1	0 3 11
United Provinces of Agra and Oudh.	1,304,127	185,177	94.01	53.55	773,480	367,011	1,650	4,07,476	0 0	0 4 5
Punjab	747,162	470,213	96.54	70.95	511,694	138,526	3,531	2,76,234	5 5	0 4 9
North-West Frontier Province	154,286	73,618	98.48	84.38	85,110	49,100	5,993	22,838	9 1	0 1 9
Central Provinces and Berar	492,882	70,550	98.24	58.29	364,579	93,881	1,907	1,99,973	12 8	0 6 7
Madras Presidency	1,499,278	465,748	91.7	37.9	666,704	559,703	2,492	45,49,108	13 5	0 6 0
Coorg	7,635	9,879	95.99	65.62	523	4,333	1,546	5,635	0 0	0 7 3
Bombay Presidency	673,335	109,888	99.58	60.52	424,219	135,363	1,855	6,25,015	9 8	1 0 10
Burma	561,266	288,861	97.77	42.24	146,920	277,424	2,304	3,74,109	1 9	0 9 7
Ajmer-Merwara	15,216	1,921	91.32	69.99	10,830	7,830	1,120	6,319	3 6	0 6 8
TOTAL	8,656,193	3,331,447	96.92	59.50	3,761,421	3,590,882	1,748	31,73,803	0 11	0 5 2

* Excluding those the results of which were not known.

† Exclusive of the pay and allowances of the Assistant Directors of Public Health.

APPENDIX TO SECTION III.—VACCINATION—contd.

Statement No. II.—Vaccination operations performed by the Special and Dispensary Establishments separately, deaths from small-pox, etc., during the official year 1925-26.

Province.	Population.	NUMBER OF OPERATIONS (PRIMARY AND RE-VACCINATIONS COMBINED).			Ratio of successful vaccinations per 1,000 of population.	Percentage of annual estimated births at 40 per 1,000 of population successfully vaccinated.	DEATHS FROM SMALL-POX.*	
		By Special Department.	By Dispensary Staff.	TOTAL.			Number.	Ratio per 1,000 of population.
Delhi	500,539	27,301	...	27,301	42.20	63.85	130	.26
Bengal Presidency	43,597,755	2,931,020	99,158	3,030,178	51.3	18.20	17,436	.4
Bihar and Orissa	34,002,189	1,297,339	429	1,297,768	34.88	27.86	14,382	.4
Assam	7,985,934	495,904	5,417	501,351	54.57	21.38	2,745	.40
United Provinces of Agra and Oudh	45,375,787	1,488,732	572	1,489,304	28.60	42.61	9,373	.21
Punjab	20,650,944	1,209,133	8,242	1,217,375	45.20	61.95	7,038	.34
North-West Frontier Province	3,256,965	222,066	5,838	227,904	61.32	65.83	586	.27
Central Provinces and Berar	13,912,760	560,583	2,849	563,432	35.44	65.51	3,145	.23
Madras Presidency	†42,317,013	1,965,026	...	1,965,026	34.6	39.40	20,478	.5
Coorg	163,838	17,150	364	17,514	77.74	7.98	26	.16
Bombay Presidency	20,792,786	773,541	9,679	783,223	28.55	51.01	5,644	.29
Burma	13,169,099	842,729	7,398	850,127	47.73	27.89	3,852	.36
Ajmer-Merwara	495,271	17,137	...	17,137	30.42	54.67	1,151	2.32
TOTAL	246,223,880	11,847,664	139,976	11,987,640	39.42	38.19	85,986	.36

* For the Calendar year.

† Excluding the population of Bangalore and Secunderabad Cantts.

APPENDIX TO SECTION III.—VACCINATION—contd.

Statement No. III.—Vaccination in the European and Indian Armies during 1925.

Effective strength.

INDIAN TROOPS.													
EUROPEAN TROOPS.				WARRANT AND NON-COMMISSIONED OFFICERS AND MEN.				INDIAN COMMISSIONED, NON-COMMISSIONED OFFICERS AND MEN.					
OFFICERS.		Percentage of successful cases to total operations.		Number.		Percentage of successful cases to total operations.		Number.		Percentage of successful cases to total operations.			
Primary.	Re vaccination.	Primary.	Re vaccination.	Primary.	Re vaccination.	Primary.	Re vaccination.	Primary.	Re vaccination.	Primary.	Re vaccination.		
3	187	100	65	2	5,407	100	65	...	112	238	24,049	87	86
...	54	...	53	...	314	...	69	...	28	33	9,813	88	68
...	86	...	82	...	2,104	...	71	...	102	469	15,352	80	38
...	197	...	66	131	6,942	28	57	...	85	2,322	21,908	76	50
...	123	...	31	6	4,866	100	42	...	162	212	21,663	99	44
...	24	...	100	...	405	...	95	...	13	437	1,334	100	16
...	4	...	100	...	115	...	85	...	...	4	874	100	61
TOTAL				3	20,153	32	58	100	502	3,715	95,413	83	52

APPENDIX TO SECTION III.—VACCINATION—contd.

Non-effective strength—Families.

A.—European Troops.

	OFFICERS' WIVES.				OFFICERS' CHILDREN.				SOLDIERS' WIVES.				SOLDIERS' CHILDREN.			
	Number.		Percentage of successful cases to total operations.		Number.		Percentage of successful cases to total operations.		Number.		Percentage of successful cases to total operations.		Number.		Percentage of successful cases to total operations.	
	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.
Northern Command	1	67	100	63	32	61	100	61	4	296	100	75	281	317	98	63
Waziristan District	..	4	..	75	..	3	..	100	..	1	..	100	6	2	100	..
Western Command	..	19	..	79	13	1	100	100	..	110	..	73	108	127	58	66
Eastern "	..	37	..	65	9	33	89	* 85	7	192	43	63	126	189	81	69
Southern "	..	57	..	32	36	32	83	37	5	200	100	47	273	223	86	46
Burma District	..	14	..	100	6	7	100	100	1	42	..	95	17	39	94	100
Extra India	..	1	..	100	..	2	..	100	..	3	..	100	5	1	100	100
Total	1	199	100	59	96	139	93	65	17	844	71	66	898	917	86	62

iiii

APPENDIX TO SECTION III.—VACCINATION—*concl'd.*

Non-effective strength—Families.

B.—Indian Troops.

	EUROPEAN OFFICERS' WIVES.				EUROPEAN OFFICERS' CHILDREN.				INDIAN SOLDIERS' WIVES.				INDIAN SOLDIERS' CHILDREN.			
	Percentage of successful cases to total operations.		Number.		Percentage of successful cases to total operations.		Number.		Percentage of successful cases to total operations.		Number.		Percentage of successful cases to total operations.		Number.	
	Primary.	Re vaccination.	Primary.	Re vaccination.	Primary.	Re vaccination.	Primary.	Re vaccination.	Primary.	Re vaccination.	Primary.	Re vaccination.	Primary.	Re vaccination.	Primary.	Re vaccination.
Northern Command	...	23	...	87	5	11	80	90	15	71	93	85	92	...	98	...
Waziristan District	...	1	...	100	...	...	...	...	...	...	...	...	...	...	...	...
Western Command	...	36	...	17	9	20	100	10	...	...	...	...	...	...	...	...
Eastern "	1	12	100	67	4	3	100	100	...	45	...	64	10	24	100	96
Southern "	1	40	100	67	9	16	67	87	...	246	...	45	118	126	96	56
Burma District	...	8	...	25	5	...	100	...	...	...	...	...	...	...	...	...
Extra India	...	...	...	...	1	...	100	...	...	...	...	...	...	...	...	...
Total	2	120	100	53	33	50	88	58	15	362	93	55	220	150	97	63

APPENDIX TO SECTION V—MEDICAL RESEARCH.

List of Scientific Papers on Research written by the Research Workers under the Government of India, the Indian Research Fund Association and Provincial Governments and published during the year 1925.

I.—Papers published in the Indian Journal of Medical Research.

Acton, H. W., and Chopra, R. N.

(1) The Influence of the Hydrogen Ion Concentration on the Activity of Pressor Bases. (Volume XII, No. 3.)

(2) The Concentration of Quinine in the Circulating Blood. (Volume XIII, No. 1.)

Anderson, L. A. P., and Caius, J. F.

(1) The Effect of Storage on the Potency of Antivenomous Serum. I. (Volume XIII, No. 1.)

Anderson, L. A. P., Howard, A., and Simonsen, J. L.

(1) Studies on Iathyrisms. I. (Volume XII, No. 4.)

Anderson, L. A. P., and Sinton, J. A.

(1) The Effect of Adrenalin Injections on the Wassermann Reaction of the Normal Subject. (Volume XIII, No. 1.)

Bhatia, S. L., and Coelho, G.

(1) Some Observations on Normal Sugar-Content of Blood and the Sugar Tolerance Test. (Volume XIII, No. 1.)

Brahmachari, U. N., and Shortt, H. E.

(1) Chemotherapy of Antimonial Compounds in Kala-azar Infection. Part XIII. Further Observation on Dermal Leishmanoid. (Volume XII, No. 3.)

Brahmachari, U. N., and Maity, B. B.

(1) Chemotherapy of Antimonial Compounds in Kala-azar Infection. Part XIV. Observations on a Series of Cases of Kala-azar treated with Urea Stibamine during a Course of 32 Hours to 7 Days. (Volume XII, No. 4.)

Brahmachari, U. N., and Das, Judhithir.

(1) Chemotherapy of Antimonial Compounds in Kala-azar Infection. Part XV. Further Observations on Certain Derivatives of P-amino-phenyl-stibinic Acid. (Volume XIII, No. 1.)

Brahmachari, U. N., and Maity, B. B.

(1) Chemotherapy of Antimonial Compounds in Kala-azar Infection. Part XVI. Observations on Blood Culture of Kala-azar Patients on NNN Medium during 1922-24. (1) Comparative Value of Peripheral Blood Culture, Spleen Blood Culture and Spleen Puncture in the Diagnosis of Kala-azar. (II). The Period at which Sterilisation of the Peripheral Blood takes place during Treatment with Urea Stibamine. (Volume XIII, No. 1.)

Brahmachari, U. N.

(1) Chemotherapy of Antimonial Compounds in Kala-azar Infection. Part XVII. Further Details of the Preparation of Urea Stibamine. (Volume XIII, No. 1.)

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(1) Researches on Blood-Sugar in Indians. Part I.—Blood-Sugar Observations in Young People of Bengal. (Volume XIII, No. 2.)

(2) Certain Observations on the Mechanism of Quinine Hæmoglobi-nuria in Man. No. 1. (Volume XIII, No. 2.)

Balasubramanian, T. S.

(1) Kala-azar in the Ramnad District of the Madras Presidency. (Volume XIII, No. 1.)

Caius, J. F., and Steichen, A.

(1) Notes on the Concentration of Anticobra Serum. IV. Absorption Spectrum. (Volume XII, No. 3.)

Chandler, Asa C.

(1) The Helminthic Parasites of Cats in Calcutta and the Relation of Cats to Human Helminthic Infections. (Volume XIII, No. 2.)

(2) The Epidemiology of Hookworm and other Helminth Infections on Assam Tea Estates. (Volume XIII, No. 2.)

Chopra, R. N., and Ghosh, Sudhamoy.

(1) A Buffered Solution for Perfusion of Isolated Organs. (Volume XIII, No. 1.)

(2) Some Observations on the Pharmacological Action and Therapeutic Properties of *Adhatoda vasica* (*Basāk*). (Volume XIII, No. 2.)

Chopra, R. N., and Bose, J. P.

(1) *Cephalandra Indica* (*Telakucha*) in Diabetes. (Volume XIII, No. 1.)

Christophers, S. R.

(1) Two Malarial Surveys connected with Industrial Projects carried on in Certain very highly Malarious Localities in India. I.—Malaria at the Assam Sugar Estates and Factories, Ltd., Nalbari. Assam, 1921.

II.—Malaria, Blackwater Fever and Ankylostomiasis in Singhbhum.
(Volume XIII, No. 2.)

Christophers, S. R., Shortt, H. E., and Barraud, P. J.

(1) The Development of the Parasite of Indian Kala-azar in the Sandfly *Phlebotomus argentipes* Annandale and Brunetti. (Volume XII, No. 3.)

(2) Further Observations on the Feeding of Sandflies, *Phlebotomus argentipes*, on Cases of Indian Kala-azar. (Volume XIII, No. 1.)

(3) Temperature in Relation to Culture of *Herpetomonas donovani* on NNN Medium. (Volume XIII, No. 1.)

(4) *Culicoides* and Kala-azar in Assam. (Volume XIII, No. 1.)

(5) The Effect of Salt Solutions of Different Concentrations on the Parasite of Indian Kala-azar. (Volume XIII, No. 1.)

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(1) Estimation of Blood Sugar in Normal Rabbits and in Rabbits Inoculated Subdurally with Rabies Fixed Virus. (Volume XII, No. 3.)

(2) On Negri Bodies. (Volume XII, No. 3.)

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(1) Observation on the Reproductive System of *Cimex*: Impregnation. (Volume XII, No. 3.)

Cunningham, J., Cruickshank, J. A., and Ramakrishnan, S.

(1) Note on the Types of Pneumococci found in Cases of Pneumonia in Madras, Southern India. (Volume XII, No. 3.)

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(1) The Classification of the Streptococci found in Tropical Affections. (Volume XII, No. 3.)

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(1) The Rôle of *A. rossii* as a "Carrier" of Malaria. "The *Rossii* Problem." (Volume XII, No. 4.)

Gore, S. N.

(1) Calcium Cyanide Fumigation. (Volume XIII, No. 2.)

Govinda Raju, V.

(1) Observations on the Working of Slow Sand Filters. (Volume XIII, No. 1.)

Govinda Raju, V., and Stewart, A. D.

- (1) Economical Use of Alum in Mechanical Filters. (Volume XII, No. 4.)

Greig, E. D. W., and Kundu, S.

- (1) Observations on the Quantity of Urea Stibamine "471" (Von Heyden) and Stibamine Glucoside required for the Complete Treatment of a Case of Kala-azar. (Volume XII, No. 4.)

- (2) Observations on Two Cases of Kala-azar Resistant to Treatment. (Volume XII, No. 4.)

- (3) Observations of Glycosuria and Blood Sugar Content in Kala-azar. (Volume XII, No. 4.)

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- (1) Infection of a Monkey (*Macacus rhesus*) with the Parasite of Indian Kala-azar following the Introduction of Infective Material into the Lumen of the small Intestine. (Volume XIII, No. 1.)

Harvey, W. F.

- (1) Bacteriological and Laboratory Technique. Section XI.—Pathogenic Material Examination. (Volume XII, Nos. 3 and 4.)

- (2) Bacteriological and Laboratory Technique. Section XII.—The Microscope. (Volume XIII, Nos. 1 and 2.)

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- (1) Effects of Quinine on the Sugar of the Blood. (Volume XIII, No. 2.)

Hutchinson, C. M.

- (1) Micro-anatomy of *Cimex*, with Special Reference to the Technique of Insect Histology. (Volume XII, No. 3.)

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- (1) An Analysis of Captain Malone's Results in Vaccination against Pneumonia. (Volume XII, No. 3.)

- (2) The Stability of Solid Calcium Hypochlorite. (Volume XIII, No. 1.)

Korke, V. T.

- (1) Observations on the Life-History of Hookworm in Nature. (Volume XIII, No. 2.)

Lal, R. B.

- (1) The Relative Number of Male and Female Crescents. (Preliminary Note.) (Volume XIII, No. 2.)

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- (1) The "blood meal" of *Phlebotomus argentipes* identified by Precipitin Antisera. (Volume XII, No. 4.)

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Martin, C. De C.

- (1) The Effect of Formalin on Snake Venom. I. Diminution of Toxicity of Cobra Venom. (Volume XII, No. 4.)
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Michael, D. F.

- (1) Note on the Incidence of Kala-azar on the Pusa Estate. (Volume XIII, No. 1.)

Nand Lal.

- (1) Notes on Selective Media for Gonococcus and Pneumococcus. (Volume XIII, No. 1.)
(2) Carbolic Acid as Sterilizing Agent for Bacterial Antigen. (Volume XIII, No. 1.)
(3) The Viability of Bacterial Cultures. No. 2. (Volume XIII, No. 1.)

Napier, L. E.

- (1) A Comparative Study of the Environment Associated with Kala-azar Prevalence in Calcutta. (Volume XII, No. 4.)

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- (1) The Seasonal Variation in the Reaction and Hardness of River Water in India. Part II. (Volume XII, No. 3.)

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- (1) The Epidemiology of Cholera. I. (Volume XIII, No. 2.)

Shortt, H. E.

- (1) Note on *Bodo Phlebotomi* (*Herpetomonas phlebotomi*) (Mackie 1914): A Reconsideration of its Generic Position. (Volume XIII, No. 1.)

Shortt, H. E., and Swaminath, C. S.

- (1) Experiments to Decide whether the Bed-Bug *Cimex hemiptera*, *Fabr.*, can transmit Indian Kala-azar. (Volume XIII, No. 1.)
(2) Systemic Infection of a Monkey (*Macacus rhesus*) by Intradermal Inoculation of Spleen Puncture Material from a Case of Indian Kala-azar. (Volume XIII, No. 1.)

Sinton, J. A.

(1) Notes on Some Indian Species of the Genus *Phlebotomus*. Part X.—Abnormalities in the Appendages of Some Specimens of *Phlebotomus*. (Volume XII, No. 3.)

(2) The Indian Rat Fleas, with Special Reference to the Identification of the "Plague Fleas." (Volume XII, No. 3.)

(3) Notes on the "Thick-Film" Method of Examination for Malarial Parasites. (Volume XII, No. 3.)

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(6) Notes on Some Indian Species of the Genus *Phlebotomus*. Part XIII. Methods of Collection and Preservation. (Volume XII, No. 4.)

(7) A Clinical Method for the Estimation of the Amount of Quinine in Medical Solutions. (Volume XIII, No. 1.)

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(1) Complement Deviation and Globulin Content in the Blood of the Lepers. Part I.—The Wassermann Reaction given by Lepers' Sera. Part II.—The Globulin Content of Lepers' Sera. (Volume XII, No. 3.)

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(1) Experiments on the Onset of Immunity after Inoculation with Haffkine's Anti-Plague Vaccine. The Absence of a "Negative Phase." (Volume XII, No. 3.)

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II.—Papers published in the Indian Medical Gazette during 1925—
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- (1) Giant Urticaria. (Indian Medical Gazette, page 197.)

Acton, H. W., and Chopra, R. N.

- (1) The Problem of Epidemic Dropsy and Beri-beri. (Indian Medical Gazette, page 1.)
(2) The Treatment of Asthma. (Indian Medical Gazette, page 101.)

Chandler, Asa C.

- (1) The Migration of Hookworm Larvæ in Soil. (Indian Medical Gazette, page 105.)
(2) Notes on Some Methods for Diagnosis of Hookworm Infection and for Estimating the Egg Output. (Indian Medical Gazette, page 403.)
(3) The Transmission and Etiology of Dengue: A Critical Review. (Indian Medical Gazette, page 460.)
(4) Soil Acidity and Survival of Hookworm Larvæ. (Indian Medical Gazette, page 462.)

Chandler, Asa C., and Mukerjee, A. K.

- (1) Notes on Carbon Tetrachloride as an Anthelmintic. (Indian Medical Gazette, page 61.)
(2) Combined Carbon Tetrachloride and Oil of Chenopodium in the Treatment of Hookworm Disease. (Indian Medical Gazette, page 145.)

Chandler, Asa C., and Chopra, R. N.

- (1) The Toxicity of Carbon Tetrachloride to Cats. A Warning. (Indian Medical Gazette, page 406.)

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- (1) A Preliminary Note on the Pharmacology and Therapeutics of *Adhatoda Vasica* (Basak). (Indian Medical Gazette, page 354.)

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- (1) Variations in the Potency of Digitalis Preparations in the Tropics. (Indian Medical Gazette, page 93.)

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- (1) Bacteriological Study of Stools of 746 Clinical Cholera Cases in Calcutta. (Indian Medical Gazette, page 570.)

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- (1) Typhus-Like Fever, Probably Tick-Typhus, in Central India. (Indian Medical Gazette, page 53.)

Muir, E.

- (1) Report on a Visit to the Leper Island of Culion and on the Anti-Leprosy Work in the Philippine Islands. (Indian Medical Gazette, page 261.)

Napier, L. E.

- (1) A Preliminary Note on the Successful Treatment of Kala-azar with "Stibamine Glucoside." (Indian Medical Gazette, page 24.)
 (2) Stibosan (Von Heyden "471"). (Indian Medical Gazette, page 466.)
 (3) A New Organic Antimony Compound for the Treatment of Kala-azar. (Indian Medical Gazette, page 571.)

Strickland, C.

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 (3) The Species of *Strongyloides* (Nematoda). (Parasitology, Volume XVII, No. 4.)

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(1) Serological Observations on Relapsing Fever in Madras. (Transactions of the Royal Society of Tropical Medicine and Hygiene, Volume XIX, Nos. 1 and 2, page 11.)

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(1) Complement fixation with bilharzia—Part I.—The lipoidal nature of Cercarial antigen as used in the complement fixation test for Mammalian bilharziosis. (Journal of Pathology and Bacteriology, Volume XXVIII, No. 4.)

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(1) Some Problems of Thyroid Disease. (British Medical Journal, Volume I, page 1065.)

Muir, E.

(1) The Predisposing Causes of Leprosy. (Lancet, Volume I, page 169.)

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(1) "Periodicity" of Cholera in India. (Lancet, Volume I, page 1237.)

Strickland, C., and Roy, D. N.

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(1) Empyema of the Left Sphenoidal Sinus with Optic Neuritis and Subsequent Post-Papillitic Atrophy. (British Medical Journal, Volume I, page 597.)

APPENDIX TO SECTION VII.

PRISONERS.

APPENDIX TO SECTION VII.—PRISONERS.

A.—ADMINISTRATIONS.	Years.	Average Strength†.	RATIO PER MILLE OF STRENGTH.*										FROM										
			Constantly sick.	A.—ADMISSIONS D.—DEATHS																			
				Cholera.		Small-pox.		Malaria.		Tubercle of the lungs.		Pneumonia.		Respiratory diseases.		Dysentery.		Diarrhoea.		Anæmia and Debility.		All causes.	
				A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Burma . . .	1915-24	15,944	20	·9	·58	·2	·06	34·3	·32	12·9	4·50	4·9	1·67	10·5	·43	29·6	1·89	7·1	·20	4·1	·20	514·0	18·55
	1924	16,532	21	·7	·42	·1	...	39·4	·24	7·0	2·72	4·2	1·09	14·2	·36	30·7	·73	4·4	...	3·5	·36	943·3	13·25
	1925	17,372	15	...	...	·1	...	39·2	·40	6·3	2·36	5·5	1·38	13·6	·23	20·9	·58	3·1	·17	2·8	·06	618·1	10·30
Assam . . .	1915-24	2,161	43	·6	·32	·3	...	114·9	1·16	7·5	3·61	12·7	3·38	38·7	·74	90·5	2·51	111·2	·60	4·4	·28	929·4	23·41
	1924	2,106	31	...	...	...	...	131·5	1·42	8·5	3·32	16·1	4·27	59·8	1·90	41·3	3·32	55·6	1·42	7·1	·47	741·2	20·42
	1925	1,999	38	...	...	...	...	111·1	2·00	13·0	5·51	21·5	6·00	52·5	1·50	48·5	4·00	38·5	...	10·0	·50	835·4	31·02
Bengal . . .	1915-24	13,904	52	1·2	·48	·4	·07	849·1	1·60	9·1	2·83	11·8	2·68	45·5	·54	149·0	4·23	121·3	·67	14·5	·37	1,246·4	19·70
	1924	12,189	41	·1	·08	·2	...	810·6	1·90	8·5	2·90	12·6	3·20	36·3	·41	87·9	2·50	97·2	·41	15·5	·33	1,094·0	17·90
	1925	11,312	35	...	...	1·1	·18	270·9	·71	9·9	2·21	8·7	1·41	27·7	·35	56·6	2·03	88·8	·35	12·4	·09	912·1	13·97
Bihar and Orissa	1915-24	6,659	48	3·8	1·68	1·1	·05	229·4	·93	19·4	5·26	11·6	3·50	40·2	1·07	165·5	9·13	121·0	1·35	17·9	·77	1,046·1	35·20
	1924	5,433	37	1·1	·74	·6	...	199·3	·18	7·9	3·31	10·7	3·13	33·3	·55	114·3	3·13	125·9	·37	3·3	·18	817·8	22·82
	1925	5,411	26	·4	·18	2·4	·37	109·0	·55	7·8	1·66	8·9	1·66	31·2	·18	56·9	·74	83·7	·37	2·4	...	582·1	11·64
United Provinces of Agra and Oudh.	1915-24	26,660	21	·5	·23	·6	·02	160·9	·79	9·0	2·28	14·0	3·27	24·3	·92	30·8	2·05	17·4	·75	6·7	·29	537·8	19·01
	1924	27,182	25	·04	·04	·6	...	263·6	·52	11·0	2·13	11·3	2·32	26·9	·55	19·6	1·14	15·3	·29	5·8	·29	620·2	11·15
	1925	28,343	21	·1	·11	1·1	·14	174·1	·63	7·3	2·26	14·2	3·18	26·6	·53	13·7	·81	11·9	14	3·5	·07	477·1	10·97
Punjab . . .	1915-24	15,867	35	·1	·03	·3	...	310·2	1·20	8·2	3·50	20·7	4·86	47·5	·84	19·6	·87	37·5	·88	19·9	·61	903·4	23·51
	1924	18,282	30	...	...	·1	...	486·7	2·68	4·4	2·57	18·9	5·25	37·7	·71	9·1	·44	22·5	·27	14·9	1·20	973·5	19·25
	1925	18,094	31	2·1	1·27	·3	...	443·0	2·04	3·3	2·49	20·1	4·75	31·0	·44	6·7	·22	23·6	·61	15·6	·33	892·8	17·35
North-West Frontier Province.	1915-24	2,897	29	...	...	·3	...	426·8	1·49	8·2	2·17	22·5	6·59	39·5	1·62	43·2	2·33	17·0	·97	7·5	·45	933·4	30·17
	1924	2,967	29	...	...	...	...	433·1	2·36	14·5	3·37	13·1	3·37	38·4	3·37	29·0	1·01	15·5	·67	5·0	...	956·2	22·58
	1925	3,397	35	...	...	·6	...	480·1	·88	8·3	1·77	15·3	2·06	49·4	·88	23·5	1·18	29·4	·29	6·8	...	966·7	12·66
Central Provinces .	1915-24	4,064	15	·4	·10	·7	...	69·4	·44	6·5	2·95	9·1	2·24	19·2	1·25	41·9	2·61	22·3	1·50	3·2	·25	404·7	23·57
	1924	3,773	11	...	...	·3	...	61·5	...	5·8	1·33	6·9	1·08	20·7	1·33	44·3	·53	15·1	·27	4·0	...	328·8	9·54
	1925	3,755	8	...	...	·3	...	36·2	...	4·8	·60	10·4	1·33	17·6	1·33	23·4	·27	10·4	·53	1·1	...	230·9	9·59
Bombay . . .	1915-24	10,849	27	·8	·13	·8	·07	201·2	·58	5·4	1·95	19·7	4·93	45·2	·74	37·6	·85	41·9	·77	2·7	·18	766·2	19·63
	1924	10,786	23	·2	·09	·6	·09	284·3	·65	4·9	1·40	15·9	2·60	55·7	·19	25·7	·46	27·5	·56	3·2	·09	701·6	9·83
	1925	10,588	19	·1	·09	·2	...	188·3	·47	4·4	1·42	21·6	3·59	28·5	·85	31·5	·47	23·2	·28	3·9	·09	552·8	11·71
Madras . . .	1915-24	14,207	18	1·5	·48	·6	·06	26·1	·46	8·3	2·89	6·9	2·08	19·0	·46	49·5	4·26	3·1	·14	3·3	·23	345·6	21·35
	1924	18,249	15	...	...	·1	...	24·3	·16	10·2	3·45	6·0	1·21	20·7	·27	67·6	2·19	·9	·06	2·3	·22	262·6	13·60
	1925	16,765	15	·1	...	·3	...	22·8	·18	12·6	3·76	5·4	·96	11·9	·18	37·2	2·74	1·97	·06	2·7	·48	231·6	13·36
India† . . .	1915-24	112,852	29	·8	·39	·5	·04	187·7	·87	9·4	3·09	13·1	3·31	31·2	·77	56·7	2·78	40·8	·66	9·0	·35	724·3	21·61
	1924	118,126	25	·2	·12	·3	·09	228·9	·96	8·2	2·57	11·3	2·59	30·4	·58	40·3	1·31	23·0	·28	6·8	·40	730·2	14·42
	1925	118,499	23	·4	·24	·6	·07	191·2	·78	7·3	2·39	12·5	2·61	24·5	·47	26·0	1·08	24·6	·26	6·2	·18	599·5	12·93
Andamans . . .	1915-24	11,389	52	...	...	·01	...	807·9	2·81	5·4	3·38	14·1	6·30	52·5	1·80	68·1	5·10	39·4	·77	4·6	·28	1,381·9	35·03
	1924	8,538	36	...	...	...	...	377·1	4·33	6·2	2·11	7·7	3·16	30·7	1·17	54·3	6·68	18·4	·23	4·1	·70	818·6	30·45
	1925	7,976	29	...	...	...	...	278·9	1·88	4·5	2·01	8·2	3·26	28·8	·25	51·3	5·14	9·9	...	3·5	·50	613·3	22·67
India‡ . . .	1915-24	124,241	32	·7	·35	·5	·04	244·6	1·05	9·1	3·11	13·2	3·59	33·1	·86	57·8	2·98	40·6	·67	8·6	·34	784·6	22·84
	1924	126,664	25	·2	·11	·3	·01	238·9	1·18	8·1	2·54	11·1	2·63	30·4	·62	41·2	1·68	27·2	·27	6·6	·42	736·1	15·34
	1925	126,475	23	·4	·22	·6	·06	196·7	·85	7·1	2·36	12·2	2·65	24·8	·46	27·6	1·34	23·1	·25	6·1	·21	600·7	11·54

* Excluding subsidiary jails.

† Including Delhi, Ajmer, Sibi, Quetta, Mercara, Rajkot and Secunderabad and excluding Andamans.

‡ The decennial ratios are worked on the total strength of the ten-year period.

§ Including Andamans.

APPENDIX TO SECTION VII.—PRISONERS—*contd.*

B.—Groups.	Years.	Average Strength.†	Constantly sick.	RATIO PER MILLE OF STRENGTH.*										FROM									
				A.—ADMISSIONS D.—DEATHS																			
				Influenza.		Cholera.		Small-pox.		Enteric Fever.		Malaria.		Pyrexia of un- certain origin.		Pneumonia.		Dysentery.		Diarrhoea.		All Causes.	
				A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Group I.—Burma Coast and Bay Islands.	1915-24	10,657	20	34.6	.30	.4	.26	2	.04	2.7	.52	35.1	.20	51.2	.04	4.2	1.36	32.4	2.06	17.0	.10	547.4	17.08
	1924	11,199	20	2.2	...	...	...	1	...	2.3	.45	32.0	.09	53.2	...	3.1	.80	30.5	.71	3.1	...	1,077.1	10.35
	1925	11,920	15	43.7	.17	...	...	1	...	1.4	.25	42.2	.34	26.3	...	4.7	1.01	24.6	.60	2.6	.08	731.6	9.90
Group II.—Burma Inland.	1915-24	5,126	20	42.3	.16	2.0	1.25	.3	.12	2.0	.66	32.9	.59	22.9	...	6.3	2.32	24.2	1.78	.1	1.21	449.1	22.06
	1924	5,333	22	3.8	...	2.3	1.31	...	...	.6	.38	55.1	.56	17.6	...	6.6	1.69	31.1	.75	6.9	...	662.3	19.31
	1925	5,452	15	.2	...	...	...	.2	...	2.0	.55	32.6	.55	11.4	...	7.2	2.20	12.8	.55	4.2	.37	370.0	11.20
Group III.—Assam	1915-24	2,063	43	101.4	3.25	.6	.34	.3	...	.8	.34	110.8	.97	77.9	.29	12.8	3.34	89.3	2.67	108.4	.44	903.5	22.34
	1924	2,023	30	60.8	...	...	...	...	...	.5	...	129.5	1.48	24.3	...	16.8	4.45	42.0	3.46	47.5	.10	697.0	20.27
	1925	1,913	39	68.0	2.61	...	...	...	...	1.0	.52	110.8	1.56	28.2	...	21.4	6.27	47.0	3.66	35.5	...	832.7	31.31
Group IV.—Bengal and Orissa.	1915-24	14,600	52	63.2	1.22	1.4	.53	.5	.06	1.2	.29	343.2	1.50	16.7	.04	11.7	2.70	149.7	4.73	51.7	.71	1,232.4	20.54
	1924	12,495	40	35.4	.16	.1	.08	.2	...	3.1	.64	305.0	1.92	35.6	.08	12.3	3.12	87.2	2.48	96.4	.40	1,066.9	17.93
	1925	11,647	36	39.8	.52	.1	...	1.7	.17	2.7	.62	269.1	.77	27.1	.09	9.2	1.37	57.4	1.99	87.7	.34	895.7	13.74
Group V.—Gangetic Plain and Chutia Nagpur.	1915-24	22,943	29	50.8	3.28	1.3	.61	.8	.03	.9	.17	181.9	.78	8.4	.05	12.4	3.14	65.5	3.78	44.2	.85	682.2	23.16
	1924	22,271	29	9.5	.31	.3	.23	.6	...	1.0	.31	259.5	.36	6.4	.09	11.0	2.56	44.3	1.75	41.9	.31	683.8	14.86
	1925	22,969	23	39.9	.35	.1	.09	1.2	.22	.6	.13	157.7	.57	3.3	...	11.5	2.53	22.2	.57	28.3	.18	488.9	10.93
Group VI.—Upper Sub-Himalaya.	1915-24	15,779	28	32.1	3.36	.3	.11	.3	.01	.8	.23	276.9	1.03	8.0	.06	20.0	4.54	24.1	1.36	32.2	.78	769.8	19.19
	1924	17,221	25	1.7	...	...	...	.4	...	1.1	.29	423.5	1.74	1.5	...	19.2	4.90	12.6	.64	19.2	.23	831.6	14.23
	1925	18,172	26	6.1	.27	2.2	1.38	.7	.06	.6	.22	408.3	1.48	2.2	...	20.6	4.90	11.3	.61	21.7	.55	829.7	15.30
Group VII.—North- West Frontier, Indus valley, and North-Western Rajputana.	1915-24	12,152	34	41.2	4.04	.04	.02	.5	.03	1.5	.30	337.1	1.51	34.2	.05	25.9	6.76	25.6	1.29	31.2	.65	904.7	28.00
	1924	13,624	29	...	...	...	...	.2	.08	2.9	.29	387.9	2.50	30.6	...	18.1	3.89	10.6	.44	18.3	.37	894.3	17.98
	1925	14,024	32	37.7	.71	...	...	.4	...	6.5	.43	369.7	1.57	12.0	...	24.0	4.21	13.5	.36	22.0	.28	830.9	16.26
Group VIII.—South- Western Raj- putana, Central India, and Gujarat.	1915-24	4,722	17	32.4	3.11	.3	.15	.3	...	.4	.17	141.8	.59	.5	.02	13.2	2.88	20.5	1.02	15.8	.66	459.1	16.71
	1924	4,819	17	26.4	...	.2	...	.4	...	...	...	122.2	.21	...	...	7.5	.83	10.0	.06	11.4	.21	539.1	8.92
	1925	4,783	11	4.4	...	...	...	.2	...	.8	.63	95.8	.63	.2	...	10.5	2.93	11.1	1.25	5.2	...	274.7	10.04
Group IX.—Deccan	1915-24	9,002	24	69.5	4.62	.4	.24	.4	...	.3	.09	126.0	.44	20.7	.07	10.8	2.53	43.4	1.82	39.3	1.21	646.1	21.04
	1924	8,311	19	11.1	...	.1	.12	.1	...	.7	.24	167.0	.24	2.6	...	6.3	.84	41.9	.72	22.6	.60	524.6	9.63
	1925	8,335	15	2.0	...	.1	.12	.2	...	.4	.12	96.5	.12	5.2	.12	9.7	1.20	29.6	.36	17.5	.48	373.5	8.40
Group X.—Western Coast.	1915-24	2,690	25	36.2	2.86	1.3	.63	1.9	.19	1.9	.45	152.9	.48	.7	...	8.7	3.12	60.0	3.64	33.2	1.00	597.8	26.35
	1924	3,268	18	9.8	...	...	...	...	...	1.5	.31	237.1	.91	.6	...	13.5	3.98	22.3	.61	32.1	.61	548.4	14.08
	1925	2,785	17	33.8	...	...	...	...	...	1.1	...	220.1	.72	...	...	9.7	2.51	36.6	.72	31.2	.36	578.5	10.77
Group XI.—Southern India.	1915-24	12,170	20	52.6	3.13	.7	.45	.7	.07	.9	.12	39.3	.51	8.9	.04	7.5	2.19	52.2	4.26	3.7	.12	368.5	21.45
	1924	16,698	16	8.1	.06	...	...	.1	...	.3	.12	26.5	.12	.3	...	5.8	1.02	72.5	2.28	1.0	.06	274.8	12.58
	1925	15,540	16	29.0	.13	.1	...	.3	...	2.6	.26	24.3	.19	.5	...	5.1	.97	39.4	2.96	2.1	.06	234.8	13.77
Group XII.—Hills	1915-24	826	35	75.3	3.15	...	...	1.3	.36	2.2	.86	221.5	2.06	89.8	.36	21.7	4.11	82.9	2.66	69.5	1.69	1,003.5	24.69
	1924	754	38	...	...	...	...	...	...	10.6	1.33	262.6	1.33	116.7	...	18.6	1.33	57.0	...	62.3	1.33	1,035.8	19.50
	1925	847	26	3.5	...	...	...	1.2	...	2.4	...	162.9	2.36	49.6	1.18	29.5	5.90	34.2	2.36	50.8	...	730.8	16.53
India†	1915-24	112,852	35	48.5	2.76	.8	.39	.5	.04	1.1	.27	187.7	.87	19.3	.05	13.1	3.31	56.7	2.77	40.7	.66	724.3	21.61
	1924	118,126	25	10.5	.08	.2	.12	.3	.09	1.5	.31	228.9	.96	16.0	.03	11.3	2.59	40.3	1.31	28.0	.28	730.2	14.42
	1925	118,499	23	27.5	.32	.4	.24	.6	.07	1.9	.30	191.2	.78	9.5	.03	12.5	2.31	26.0	1.08	24.6	.26	599.5	12.93
Andamans	1915-24	11,369	52	34.7	2.73	...	...	.1	...	1.2	.36	807.9	2.81	4.3	.12	14.1	6.30	68.1	5.08	39.4	.78	1,381.9	35.03
	1924	8,538	36	.7	...	...	...	...	...	1.2	.59	377.1	4.33	...	...	7.7	54.3	6.68	16.4	.23	...	818.6	30.45
	1925	7,976	29	...	...	...	...	...	...	.5	...	278.9	1.88	...	...	8.2	3.26	51.3	5.14	9.9	...	612.3	22.67
India§	1915-24	1 241	36	47.2	2.75	.7	.35	.5	.04	1.2	.28	244.6	1.05	17.9	.06	13.2	3.59	57.8	2.98	40.6	.67	784.6	22.84
	1924	1 664	25	9.8	.08	.2	.11	.3	.01	1.5	.33	238.9	1.18	14.9	.02	11.1	2.63	41.2	1.68	27.2	.27	736.1	15.24
	1925	126,475	23	25.8	.30	.4	.22	.6	.06	1.8	.28	196.7	.85	8.9	.03	12.2	2.65	27.6	1.34	23.1	.25	600.7	13.54

* Excluding subsidiary jails.

† Including Aden and excluding Andamans.

‡ The decennial ratios are worked on the total strength of the ten-year period.

§ Including Andamans.

APPENDIX TO SECTION VII.—PRISONERS—*contd.*

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C.—CAUSES OF ADMISSION.	Years.*	Janu- ary.	Feb- ruary.	March.	April.	May.	June.	July.	August.	Septem- ber.	October.	Novem- ber.	Decem- ber.	TOTAL.
Cholera	1921	...	...	4	31	4	3	17	36	16	...	...	2	113
	1922	...	3	24	4	3	64	2	2	7	4	2	2	117
	1923	...	...	...	2	2	...	2	3	...	...	1	...	10
	1924	...	...	1	5	2	4	1	...	2	...	7	...	22
	1925	...	1	...	2	...	...	...	34	8	...	...	...	45
TOTAL	1921-1925	...	4	29	44	11	71	22	75	33	4	10	4	307
Enteric Fever	1921	7	5	3	11	10	7	10	16	14	9	6	5	103
	1922	8	20	12	23	35	33	22	18	13	20	14	12	280
	1923	11	9	9	18	13	14	20	23	20	12	12	8	169
	1924	7	4	10	15	14	31	16	29	30	12	4	13	135
	1925	11	6	13	21	47	21	33	33	15	11	7	11	229
TOTAL	1921-1925	44	44	47	88	119	106	101	119	92	64	43	49	916
Malaria	1921	1,063	816	1,059	1,456	1,602	1,189	1,533	2,235	3,250	4,031	2,843	1,760	22,337
	1922	1,223	1,114	1,246	1,529	1,558	1,555	1,507	2,343	3,004	4,203	3,078	1,976	24,636
	1923	1,375	1,122	1,331	1,420	1,830	1,884	1,988	2,419	4,013	4,203	3,309	2,006	26,900
	1924	1,248	1,166	1,306	1,553	2,084	2,163	2,546	2,732	3,886	4,963	3,931	2,660	30,261
	1925	1,347	1,012	1,201	1,296	1,642	1,563	1,916	3,247	3,307	2,648	2,011	1,467	22,637
TOTAL	1921-1925	6,256	5,230	6,143	7,254	8,716	8,354	9,790	12,976	17,460	20,068	15,175	9,869	127,291

Pyrexia of uncertain origin	1921	127	56	69	112	118	150	214	310	236	365	324	304	2,365
	1922	257	345	355	349	292	269	397	289	271	351	306	214	3,697
	1923	194	110	140	128	178	212	230	226	248	316	230	142	2,404
	1924	78	70	110	133	174	175	203	205	151	235	205	147	1,886
	1925	97	83	96	110	75	127	74	147	91	79	85	60	1,124
TOTAL	1921-1925	753	664	770	832	837	933	1,168	1,177	997	1,346	1,152	867	11,496
Dysentery	1921	363	265	342	331	323	381	608	865	698	525	500	415	5,616
	1922	807	484	581	469	540	584	781	763	610	561	519	470	7,169
	1923	384	330	401	413	445	653	638	777	709	611	494	411	6,266
	1924	395	266	278	372	413	440	620	599	530	507	456	350	5,226
	1925	268	177	206	250	289	325	344	315	239	217	218	228	3,076
TOTAL	1921-1925	2,217	1,522	1,808	1,835	2,010	2,383	2,991	3,319	2,786	2,421	2,187	1,874	27,353
Diarrhoea	1921	192	228	327	299	304	376	566	611	459	373	320	274	4,329
	1922	233	225	399	388	413	375	501	481	329	362	385	266	4,357
	1923	208	186	344	376	320	329	511	446	261	303	239	222	3,745
	1924	192	206	359	336	287	290	380	410	351	256	189	187	3,445
	1925	139	122	258	339	265	271	305	317	227	219	229	150	2,841
TOTAL	1921-1925	964	967	1,687	1,738	1,589	1,641	2,263	2,265	1,627	1,515	1,962	1,099	18,717

* Excluding Andamans.

APPENDIX TO SECTION VII.—PRISONERS—*contd.*

D.—Sickness and mortality from Principal diseases.	Average annual strength †	INFLUENZA.				CHOLERA.				SMALL-POX.				ENTERIC FEVER.				MALARIA.				PYREXIA OF UNCERTAIN ORIGIN.				TUBERCLE OF THE LUNGS.			
		ACTUALS.		RATIOS.		ACTUALS.		RATIOS.		ACTUALS.		RATIOS.		ACTUALS.		RATIOS.		ACTUALS.		RATIOS.		ACTUALS.		RATIOS.		ACTUALS.		RATIOS.	
		Admissions.	Deaths.	Admission rates.	Death rates.	Admissions.	Deaths.	Admission rates.	Death rates.	Admissions.	Deaths.	Admission rates.	Death rates.	Admissions.	Deaths.	Admission rates.	Death rates.	Admissions.	Deaths.	Admission rates.	Death rates.	Admissions.	Deaths.	Admission rates.	Death rates.	Admissions.	Deaths.	Admission rates.	Death rates.
Years.																													
1916	104,803	191	...	1.7	...	78	35	.7	.31	35	2	.3	.02	159	37	1.4	.32	17,518	94	153.6	.82	2,442	3	21.4	.03	1,031	384	9.0	3.37
1917	105,264	241	4	2.3	.04	101	40	1.0	.38	22	3	.2	.03	81	25	.8	.24	20,231	80	192.2	.76	1,533	4	14.6	.04	1,142	386	10.8	3.67
1918	107,859	28,871	1,982	259.6	18.46	101	40	.9	.37	59	5	.5	.05	95	28	.9	.26	18,378	94	171.2	.88	1,725	7	16.1	.06	1,323	400	12.3	3.73
1919	115,499	8,006	445	69.3	3.85	279	140	2.4	1.21	155	21	1.3	.18	65	16	.6	.14	22,949	122	197.8	1.06	1,794	8	15.5	.07	1,093	360	9.5	3.12
1920	106,951	6,733	304	63.0	2.84	30	18	.3	.17	117	5	1.1	.05	105	36	1.0	.34	19,971	96	186.7	.90	2,132	2	19.9	.02	1,053	319	9.8	2.98
1921	110,523	5,247	201	47.5	1.82	113	54	1.0	.49	43	3	.4	.03	103	26	.9	.24	22,837	92	206.6	.83	2,385	7	21.6	.06	1,041	342	9.4	3.09
1922	120,332	3,182	155	26.4	1.29	117	62	1.0	.52	41	4	.3	.03	230	39	1.9	.32	24,636	102	204.7	.85	3,657	13	30.7	.11	1,960	325	8.8	2.70
1923	119,456	1,458	9	12.2	.08	10	6	.08	.05	56	1	.5	.08	163	36	1.4	.3	23,728	102	198.5	.90	2,404	3	20.1	.03	997	336	8.9	2.78
1924	118,126	1,238	10	10.5	.08	22	14	.19	.12	32	1	.3	.09	175	37	1.5	.31	27,041	113	228.9	.96	1,886	3	16.0	.03	968	304	8.2	2.57
1925	118,499	3,262	38	27.5	.32	45	28	.4	.24	76	8	.6	.07	229	35	1.9	.30	22,657	92	191.2	.78	1,124	3	9.5	.03	862	283	7.3	2.39

D.—Sickness and mortality from Principal diseases.	PNEUMONIA.				RESPIRATORY DISEASES.				DYSENTERY.		DIARRHŒA.				ANÆMIA AND DEBILITY.			
	ACTUALS.		RATIOS.		ACTUALS.		RATIOS.		ACTUALS.		RATIOS.		ACTUALS.		RATIOS.		ACTUALS.	
	Admissions.	Deaths.	Admission rates.	Death rates.	Admissions.	Deaths.	Admission rates.	Death rates.	Admissions.	Deaths.	Admission rates.	Death rates.	Admissions.	Deaths.	Admission rates.	Death rates.	Admissions.	Deaths.
Years.																		
1916	1,267	307	11.1	2.09	3,451	90	30.2	.79	6,934	348	60.8	3.05	5,023	82	44.0	.72	1,097	45
1917	1,328	343	12.6	3.26	3,436	84	32.6	.80	5,840	258	55.5	2.45	4,804	64	45.6	.61	1,236	38
1918	1,816	559	16.9	5.21	3,516	121	32.8	1.18	7,728	881	72.0	3.55	5,660	97	52.7	.90	1,560	59
1919	1,572	416	13.6	3.60	3,347	108	30.7	.94	8,334	435	72.2	4.20	6,318	148	54.7	1.38	933	48
1920	1,341	322	12.5	3.01	3,311	78	31.0	.69	5,212	250	48.7	2.37	4,173	71	39.0	.65	795	29
1921	1,519	378	13.7	3.42	3,321	81	30.0	.73	5,616	223	50.8	2.02	4,329	56	39.2	.51	647	49
1922	1,613	415	13.4	3.45	3,864	76	32.1	.68	7,169	521	59.6	4.33	4,357	54	36.2	.45	758	30
1923	1,591	350	13.3	2.9	3,785	70	31.7	.59	5,581	197	46.7	1.6	3,498	48	29.3	.40	737	20
1924	1,333	306	11.3	2.59	3,585	69	30.4	.58	4,762	155	40.3	1.31	3,305	33	28.0	.28	799	47
1925	1,481	309	12.5	2.61	2,905	56	24.5	.47	3,076	128	26.0	1.08	2,841	31	24.6	.26	788	22

† Excl. of Andamans.

APPENDIX TO SECTION VII.—PRISONERS—*contd.*

E.—STATISTICS OF CONVICTS ONLY. Ad.—Admission rates. D.—Death rates.	1921.				1922.				1923.				1924.				1925.			
	RATIO PER 1,000 OF STRENGTH.		Average strength.	RATIO PER 1,000 OF STRENGTH.		Average strength.	RATIO PER 1,000 OF STRENGTH.		Average strength.	RATIO PER 1,000 OF STRENGTH.		Average strength.	RATIO PER 1,000 OF STRENGTH.		Average strength.	RATIO PER 1,000 OF STRENGTH.		Average strength.	RATIO PER 1,000 OF STRENGTH.	
	Ad.	D.		Ad.	D.		Ad.	D.		Ad.	D.		Ad.	D.		Ad.	D.		Ad.	D.
Burma . . . { Central District	10,177	499.1	15.02	10,391	568.2	16.59	10,434	1,004.4	12.0	1,004.4	12.0	10,565	787.7	11.9	11,352	590.9	9.2	4,787	431.0	11.3
Assam . . . { Central District	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bengal . . . { Central District	2,315	941.0	37.59	2,572	960.3	34.49	2,224	779.2	26.1	779.2	26.1	1,971	771.2	21.3	1,911	810.0	31.4	1,911	810.0	31.4
Bihar and Orissa . . . { Central District	6,957	991.1	14.36	6,139	1,023.0	16.29	5,936	821.4	16.0	821.4	16.0	5,767	773.2	15.1	5,551	531.7	9.7	5,551	531.7	9.7
United Provinces . . . { Central District	6,153	1,498.0	13.35	6,372	1,439.9	21.97	5,358	1,491.2	16.1	1,491.2	16.1	4,974	1,465.2	23.3	4,640	1,394.1	18.5	4,640	1,394.1	18.5
Central Provinces . . . { Central District	2,837	1,144.5	40.54	3,045	1,041.1	23.97	3,439	1,121.3	36.0	1,121.3	36.0	3,560	861.7	23.1	3,415	545.8	10.5	3,415	545.8	10.5
Punjab . . . { Central District	2,259	1,181.9	27.45	1,850	1,017.3	8.65	1,593	884.4	8.2	884.4	8.2	1,795	775.5	23.4	1,884	677.3	15.3	1,884	677.3	15.3
North-West Frontier Province . . . { Central District	10,946	492.0	15.80	11,390	553.2	13.70	11,728	469.1	11.8	469.1	11.8	11,013	540.5	8.6	11,017	387.4	7.3	11,017	387.4	7.3
Central Provinces . . . { Central District	11,039	707.9	25.73	11,903	650.4	14.53	12,906	617.1	14.9	617.1	14.9	12,890	636.3	13.2	13,808	544.3	15.4	13,808	544.3	15.4
Punjab . . . { Central District	6,708	1,143.0	16.40	7,833	990.0	11.75	8,126	962.5	12.6	962.5	12.6	7,895	1,237.5	31.0	8,303	1,060.8	16.9	8,303	1,060.8	16.9
North-West Frontier Province . . . { Central District	5,702	687.8	19.47	7,579	916.0	12.53	7,450	862.8	17.3	862.8	17.3	...	...	...	8,340	809.2	18.6	8,340	809.2	18.6
Central Provinces . . . { Central District	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bombay . . . { Central District	2,141	1,066.3	31.49	2,701	1,473.0	36.66	2,794	1,061.2	19.3	1,061.2	19.3	2,927	963.7	22.9	3,331	978.4	13.9	3,331	978.4	13.9
Madras . . . { Central District	2,955	490.7	42.21	2,535	393.7	13.15	2,055	453.5	25.3	453.5	25.3	1,890	353.5	7.4	1,932	222.0	5.2	1,932	222.0	5.2
TOTAL OF THE ABOVE PROVINCES.	1,154	454.1	26.86	1,538	336.4	24.71	2,010	345.8	15.9	345.8	15.9	1,872	315.2	13.3	1,817	241.6	14.3	1,817	241.6	14.3
Central Provinces . . . { Central District	4,401	963.2	15.91	4,146	733.3	8.44	3,947	830.8	11.9	830.8	11.9	4,745	575.6	11.6	4,771	402.0	12.5	4,771	402.0	12.5
Bombay . . . { Central District	6,770	6,062.8	32.16	6,400	792.0	13.44	5,782	680.2	11.8	680.2	11.8	5,499	824.2	9.1	5,350	689.3	11.4	5,350	689.3	11.4
Madras . . . { Central District	9,766	388.9	24.81	15,743	535.7	51.32	16,629	338.5	17.6	338.5	17.6	15,516	271.4	13.1	13,987	235.4	14.4	13,987	235.4	14.4
TOTAL OF THE ABOVE PROVINCES.	2,407	546.3	26.59	3,036	903.0	36.23	2,554	516.1	9.4	516.1	9.4	2,600	353.5	8.1	2,879	388.6	1.4	2,879	388.6	1.4
Central Provinces . . . { Central District	53,845	621.1	19.59	61,231	688.5	24.04	62,365	677.5	15.3	677.5	15.3	60,941	650.5	13.6	60,308	505.8	11.4	60,308	505.8	11.4
TOTAL OF THE ABOVE PROVINCES.	44,772	881.9	26.13	48,638	859.5	19.42	47,397	789.6	15.1	789.6	15.1	48,635	845.9	15.9	48,456	695.6	14.7	48,456	695.6	14.7

APPENDIX TO SECTION VII.—PRISONERS—*contd.*

F.—STATISTICS OF CONVICTS ONLY.
Arranged according to duration of confinement.

		Not exceeding six months.	Above six months and not exceeding one year.	Above one year and not exceeding two years.	Above two years and not exceeding three years.	Above three years and not exceeding seven years.	Above seven years.	TOTAL.
1921	District Jails	23,219	10,524	6,612	2,733	1,920	463	45,471
	Deaths	604	186	132	33	40	14	1,009
	Ratio per 1,000 of strength	26.01	17.67	19.96	12.07	20.83	30.24	22.19
	Central Jails	17,395	10,299	9,346	7,128	6,261	3,761	54,190
1922	District Jails	398	157	233	95	138	33	1,054
	Deaths	22.98	15.24	24.93	13.33	22.04	8.77	19.45
	Ratio per 1,000 of strength	24,953	11,391	6,829	3,063	2,408	653	49,097
	Central Jails	513	156	93	53	59	22	896
1923	District Jails	20.56	13.70	14.03	17.30	24.50	83.69	18.25
	Deaths	18,888	12,459	10,324	7,661	6,604	5,157	61,093
	Ratio per 1,000 of strength	782	251	153	95	138	53	1,472
	Central Jails	41.40	20.15	14.82	12.40	20.90	10.28	24.09
1924	District Jails	22,327	11,028	7,025	3,259	2,787	1,180	47,556
	Deaths	365	122	107	50	54	18	716
	Ratio per 1,000 of strength	16.3	11.1	15.2	15.3	19.4	15.9	15.1
	Central Jails	17,144	11,797	13,263	8,355	6,958	4,884	62,401
1925	District Jails	258	186	202	89	149	64	948
	Deaths	15.0	15.8	15.2	21.4	10.7	13.1	15.2
	Ratio per 1,000 of strength	20,429	11,103	7,883	3,677	3,088	1,250	47,430
	Central Jails	398	163	134	51	66	23	755
1926	District Jails	16.05	13.78	17.0	13.87	21.37	18.40	15.92
	Deaths	15,344	11,700	10,681	10,878	7,477	5,140	61,220
	Ratio per 1,000 of strength	175	124	186	166	121	56	828
	Central Jails	11.42	10.60	17.41	15.26	16.19	10.89	13.52
1927	District Jails	20,164	11,234	8,017	4,277	3,125	1,350	48,167
	Deaths	345	134	101	50	54	26	710
	Ratio per 1,000 of strength	17.11	11.93	12.60	11.70	17.28	19.26	14.74
	Central Jails	15,101	11,190	9,995	9,832	9,499	4,946	60,563
1928	District Jails	171	92	120	109	154	39	685
	Deaths	11.32	8.22	12.01	11.09	16.21	7.89	11.31
	Ratio per 1,000 of strength							
	Central Jails							

APPENDIX TO SECTION VII—PRISONERS—contd.
RATIOS of ADMINISTRATIONS.

RATIOS PER 1,000 OF THE AVERAGE STRENGTH.

	Burma.	Assam.	Bengal.	Bihar and Orissa.	United Provinces.	Punjab.	N. W.F. Province.	Central Provinces.	Bombay.	Madras.	India.*	Andamans.	India.†
I.—AVERAGE ANNUAL STRENGTH	17,372	1,999	11,312	5,411	28,343	18,094	3,397	3,755	10,588	16,765	118,499	7,976	126,475
II.—CONSTANTLY SICK RATE OF THE YEAR INCLUDING SUBSIDIARY JAILS AND LOCK-UPS	15'1	38'0	35'2	25'9	20'8	31'3	35'0	8'3	18'5	15'5	22'6	20'0	23'0
III.—ADMISSION RATE OF THE YEAR—	...	35'6	34'1	23'6	...	30'2	34'3	8'9	16'6	14'8	22'0	...	22'4
Influenza	30'0	65'0	39'2	101'1	15'0	2'6	44'4	3'7	38'7	31'0	27'5	...	25'8
Cholera . . . . .	...	...	...	4	1	2'1	...	...	1	1	4	...	4
Small-pox	1	...	1'1	2'4	1'1	3	6	3	2	3	6	...	6
Enteric Fever	1'6	1'5	2'6	1'7	4	4'6	5'0	3	6	2'5	1'9	5	1'8
Malaria	39'2	111'1	270'9	109'0	174'1	443'0	480'1	36'2	188'3	22'8	191'2	278'9	196'7
Sandfly Fever . . . . .	...	...	...	...	...	3	8'0	3	...	1	3	...	3
Pyrexia of uncertain origin	21'6	32'0	30'6	14'2	1'4	7'8	14'4	5'1	1	5	9'5	...	8'9
Tubercle of the lungs	6'3	13'0	9'9	7'8	7'3	3'3	8'3	4'8	4'4	12'6	7'3	4'5	7'1
Pneumonia	5'5	21'5	8'7	8'9	14'2	20'1	15'3	10'4	21'6	5'4	12'5	8'2	12'2
Respiratory Diseases	13'6	52'5	27'7	31'2	26'6	31'0	49'4	17'6	28'5	11'9	24'5	28'8	24'8
Dysentery	20'9	48'5	56'6	56'9	13'7	6'7	23'5	23'4	31'5	37'2	26'0	51'3	27'6
Diarrhoea	3'1	38'5	88'8	83'7	11'9	23'6	29'4	10'4	23'2	2'0	24'6	9'9	23'1
Spleen Diseases	1	...	1	...	3	1	...	...	2	...	1	1'1	2
Scurvy . . . . .	...	...	4	...	...	...	...	...	6	...	1	3	1
IV.—DEATH RATE OF THE YEAR—	2'8	10'0	12'4	2'4	3'5	15'6	6'8	1'9	3'9	2'7	6'2	3'5	6'1
Cholera	18'0	38'5	48'8	24'0	58'1	64'7	93'9	21'6	35'8	4'9	41'2	26'2	40'2
Small-pox . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...
Enteric Fever	618'1	835'4	912'1	582'1	477'1	892'8	966'7	230'9	552'8	231'6	599'5	612'3	600'7
Malaria . . . . .	...	795'0	935'6	615'0	...	876'0	931'7	236'5	630'0	299'5	614'5	...	614'4
Sandfly Fever . . . . .	...	...	...	18	11	1'27	...	...	09	...	24	...	22
Pyrexia of uncertain origin . . . . .	...	...	18	37	14	...	...	...	...	...	07	...	06
Tubercle of the Lungs	35	50	53	18	14	55	...	27	19	24	30	...	28
Pneumonia	40	2'00	7'1	55	63	2'04	88	...	47	18	78	1'88	85
Respiratory Diseases . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...
Dysentery	2'36	5'51	2'21	1'66	2'26	2'49	1'77	80	1'42	3'76	2'39	2'01	2'36
Diarrhoea	1'38	6'00	1'41	1'66	3'18	4'75	2'06	1'33	3'59	96	2'61	3'26	2'65
Hepatic Abscess	23	1'50	35	18	53	44	88	1'33	85	18	47	25	46
Anaemia and Debility	58	4'00	2'03	74	81	22	1'18	27	47	274	1'08	5'14	1'34
Phagedana, Slough and Gangrene	17	...	35	37	14	61	29	53	28	06	26	...	25
ALL CAUSES . . . . .	...	...	...	18	04	...	...	...	...	...	02	...	02
INCLUDING SUBSIDIARY JAILS AND LOCK-UPS	06	50	03	...	07	33	...	...	09	48	18	50	21
ALL CAUSES . . . . .	...	...	...	...	04	...	...	27	...	...	03	13	03
INCLUDING SUBSIDIARY JAILS AND LOCK-UPS	10'30	31'02	13'97	11'64	10'97	17'35	12'66	9'59	11'71	13'36	12'93	22'67	13'54
ALL CAUSES . . . . .	...	29'85	13'04	11'72	...	16'56	12'93	11'02	11'12	12'52	12'65	...	13'24

* Including Ajmer, Sibi, Quetta, Secunderabad, Mercara and excluding Andamans.
† Including Ajmer, Sibi, Quetta, Secunderabad, Mercara and Andamans.

APPENDIX TO SECTION VII—PRISONERS—concl'd.

SUMMARY OF ADMISSIONS FROM ENTERIC FEVER, MALARIA, PYREXIA OF UNCERTAIN ORIGIN, CHOLERA, DYSENTERY and DIARRHŒA.

ENTERIC FEVER by months and administrations. PYREXIA OF UNCERTAIN ORIGIN by months and administrations.

ADMINISTRATIONS.	ADMISSIONS FROM ENTERIC FEVER IN EACH MONTH.												ADMISSIONS FROM MALARIA IN EACH MONTH.												ADMISSIONS FROM PYREXIA OF UNCERTAIN ORIGIN IN EACH MONTH.																	
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL.			
	3	2	2	1	5	...	7	2	1	...	3	2	28	54	36	38	32	42	104	69	63	52	64	53	74	681	40	41	34	28	17	78	24	13	20	20	42	19	376			
BURMA		
ASSAM		
BENGAL PRESIDENCY .	3	1	2	3	1	2	3	8	1	3	...	2	29	188	171	171	158	211	189	275	373	303	354	390	281	5,064	24	21	30	47	13	18	17	65	2	36	23	23	346			
BIHAR AND ORISSA .	...	...	...	...	...	...	...	...	...	...	...	...	9	36	28	29	69	38	28	32	124	76	42	57	31	520	3	3	7	2	13	9	5	29	3	1	...	2	77
UNITED PROVINCES OF AGRA AND OUDH.	1	1	2	...	1	2	...	2	11	266	230	264	346	326	262	364	921	956	499	308	193	4,935	2	1	4	6	5	2	4	3	12		
PUNJAB	4	...	3	14	24	8	11	8	3	5	2	1	83	406	287	439	367	686	651	688	1,090	1,165	1,032	698	506	8,015	21	13	12	16	20	10	3	10	16	8	6	6	141			
N.-W. F. PROVINCE .	...	...	...	...	...	...	...	...	...	...	...	...	17	125	98	61	76	68	75	153	142	250	243	178	162	1,631	...	...	...	5	1	2	16	8	...	4	6	7	49
CENTRAL PROVINCES .	...	...	...	...	...	...	...	...	...	...	...	...	1	9	10	14	7	14	7	14	17	20	12	11	1	136	2	1	4	1	2	1	1	2	1	3	1	...	19
BOMBAY PRESIDENCY	6	179	94	105	140	153	153	104	203	222	230	198	153	1,994	1		
MADRAS PRESIDENCY	1		
ANDAMANS :	4	133	103	111	165	290	350	287	207	170	133	129	138	2,225
INDIA *	11	6	15	22	47	21	33	34	15	11	7	11	233	1,480	1,115	1,031	1,105	290	350	287	207	170	133	129	138	2,225	97	83	96	110	75	127	74	147	91	79	85	60	1,124			

* Including Delhi, Sibi, Quetta, Ajmer, Secunderabad, Mercara, Rajkot and Andamans.

SUMMARY OF ADMISSIONS FROM ENTERIC FEVER, MALARIA, PYREXIA of UNCERTAIN ORIGIN, CHOLERA, DYSENTERY and DIARRHŒA—*concd.*

CHOLERA by months and administrations. *DYSENTERY by months and administrations.* *DIARRHŒA by months and administrations.*

ADMINISTRATIONS.	ADMISSIONS FROM CHOLERA IN EACH MONTH.												ADMISSIONS FROM DYSENTERY IN EACH MONTH.												ADMISSIONS FROM DIARRHŒA IN EACH MONTH.												Total.			
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.				
	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.	Total.		Total.		
BURMA	26	8	25	29	34	47	43	24	21	38	34	34	363	5	...	4	3	10	11	7	3	2	3	3	3	54	
ASSAM	5	2	3	7	8	5	16	21	8	9	9	4	97	3	3	5	2	7	12	3	14	11	6	8	3	77	
BENGAL PRESIDENCY	56	42	68	78	56	54	56	45	38	42	54	53	642	47	48	97	140	99	89	94	93	76	84	74	63	1,004	
BIHAR AND ORISSA	2	25	28	19	21	17	27	51	17	16	20	10	308	28	22	35	41	41	29	42	67	54	38	29	27	453	
UNITED PROVINCES OF AGRA AND OUDH. PUNJAB	3	18	15	26	37	44	15	28	45	36	25	47	388	24	10	38	51	28	33	39	30	17	28	19	19	336	
N.-W. F. PROVINCE	2	6	3	7	10	5	4	5	10	15	10	3	80	2	2	6	23	9	10	9	3	13	11	3	100		
CENTRAL PROVINCES	6	2	1	6	2	12	20	24	7	2	4	2	88	1	2	2	4	1	2	9	3	1	5	5	4	39	
BOMBAY PRESIDENCY	1	11	15	17	21	32	42	62	44	37	22	14	17	334	10	16	17	16	16	29	38	35	18	22	18	11	246
MADRAS PRESIDENCY	1	112	54	39	28	72	114	50	34	32	18	28	43	624	3	3	1	4	...	6	6	4	1	1	3	1	33
ANDAMANS	28	31	57	42	23	62	56	42	20	13	22	13	409	4	3	7	8	10	9	5	8	9	7	4	5	79	
INDIA *	45	296	208	263	292	312	377	400	357	259	230	240	241	3,485	143	125	265	347	275	280	310	325	236	226	233	155	2,920

* Including Delhi, Sibi, Quetta, Ajmer, Secunderabad, Mercara, Rajkot and Andamans.

